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CONSTITUTION OF INDIA

Preamble

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a **SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC** and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

CONSTITUTION OF INDIA
Part IV A (Article 51 A)

Fundamental Duties

Fundamental Duties – It shall be the duty of every citizen of India —

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem,

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom,

(c) to uphold and protect the sovereignty, unity and integrity of India,

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities, to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform,

(i) to safeguard public property and to abjure violence,

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;

(k) who is a parent or guardian, to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years

EDITOR'S NOTE

This issue of the Journal of Indian Education presents varied themes, which reflect the concerns for making education learner friendly and better in quality. Two research studies address the issues, problems and concerns of teaching-learning of science teaching at the various levels of school education. The study on gender differences and mathematical abilities establishes that both boys and girls have the same perception and level of liking of mathematics, though boys were found good in abstract thinking and symbolising concepts while girls were found good in logical and mathematical modelling The study on the mental health of teachers at the university level and effectiveness of their practices shows how mental health affects their practices in the classroom transaction. The paper on teleconferencing for monitoring *Sarva Shiksha Abhiyan* (EFA) highlights the effect of use of technology for reaching all those who are directly involved in the mission.

Two articles, one education for peace and the other on human rights education present some modes and methods of inculcating peace education and making, children aware of their as well as others' right to live in a democratic society as constructors of peace.

The issue also has a paper on thinking skills and its classification, process and development The paper underscores the role of teachers in developing thinking skills among children.

I hope that the themes discussed are of interest to you

Academic Editor

CONSTITUTION OF INDIA

Part III (Articles 12 – 35)
(Subject to certain conditions, some exceptions
and reasonable restrictions)

guarantees these

Fundamental Rights

Right to Equality

- before law and equal protection of laws;
- irrespective of religion, race, caste, sex or place of birth,
- of opportunity in public employment,
- by abolition of untouchability and titles

Right to Freedom

- of expression, assembly, association, movement, residence and profession;
- of certain protections in respect of conviction for offences,
- of protection of life and personal liberty,
- of free and compulsory education for children between the age of six and fourteen years,
- of protection against arrest and detention in certain cases

Right against Exploitation

- for prohibition of traffic in human beings and forced labour,
- for prohibition of employment of children in hazardous jobs.

Right to Freedom of Religion

- freedom of conscience and free profession, practice and propagation of religion,
- freedom to manage religious affairs;
- freedom as to payment of taxes for promotion of any particular religion,
- freedom as to attendance at religious instruction or religious worship in educational institutions wholly maintained by the State.

Cultural and Educational Rights

- for protection of interests of minorities to conserve their language, script and culture;
- for minorities to establish and administer educational institutions of their choice.

Right to Constitutional Remedies

- by issuance of directions or orders or writs by the Supreme Court and High Courts for enforcement of these Fundamental Rights

Teaching of Science at the Elementary Stage
Observations from a Qualitative Study

MANJU JAIN*

Abstract

A qualitative study of the reasons for poor status of science teaching at elementary stage, this paper delves deep into the problems and reasons for the quality of science teaching and learning in elementary schools The major reasons found were: (i) Poor maintenance of facilities for science teaching and lack of facilities, (ii) Non-interactive method of teaching science; (iii) Teaching to lower stage learner (both Primary, Upper Primary) was found to be perceived as a casual and unplanned exercise, and (iv) Domination of one way interaction in classroom Teachers are found to be using the textbook method (Reading) or question-answer method

Key words· Science Teaching, Primary, Upper Primary Stage, Teaching-learning Methods.

Science Education in Developing Countries

Science education occupies an important place in school curriculum. It is ironic that science education in the early years of schooling has not been received due attention as it requires This discipline as a matter of fact is under fire, both in developed and developing countries for different reasons. *In developing countries, the teaching of science is linked more with the exploitation of natural resources, i.e economic development, while in developed countries, the emphasis has been rather on ideas generated due to rapid advancement in science education* It is precisely due to its progressive and critical nature, it has always been the prime focus in the agenda of various committees and commissions

The status of science teaching has shown considerable decline in developing

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This Paper is based on a research study entitled *Status and Emerging Trends in Science Teaching at the Elementary Stage.*

countries Curriculum relevance has a great impact on status of science teaching at school stage. Many developed and developing countries in the last decade have regularly been in the process of reforming science curriculum to make it more pragmative and progressive in nature One of the prime reasons of unrealistic nature of curriculum in many developing countries is that it has been based on experiences of developed countries without considering the contextuality, practicability and relevance The curricular concerns, such as, cultural practices and traditional beliefs faced by developing countries in terms of quality of science curriculum. It impacts on curriculum in two ways Firstly, the traditional cultural practices, which are authoritarian in nature, encouraging children to respect the wisdom and authority of their elders and discouraging students to cross questions. This ideology does not match with the goals of teaching of science. Secondly, children from science streams were more influenced by western scientific thoughts rather than believing in traditional scientific beliefs/practices of the country.

Science, being process-based in nature requires adequate resources *Lack of availability of resources, both physical and human resources, affects the quality of delivery system of curriculum in developing countries.* High pupil-teacher ratio (PTR,) classroom organisation, lack of physical space for organising activities, lack of learning material, multigrade situations, lack of professional growth of teachers are some significant determinants which affect quality of science teaching to a great extent The teaching style in too many science classrooms in developing countries today remains the same essentially what it was generation ago. This resulted in poor innovation in this field Many field level observations and researches at the elementary stage showed that the problem of quality is more associated with 'utilisation of resources'.

The issue of quality of teaching science is thus more of ownership and acceptability of change in pedagogy by teachers rather than lack of resources. Teacher is thus another important 'key resource', which affects teaching of science classrooms to a greater extent Devoid of 'hands-on' experiences to teachers and planning of training programmes without assessing needs of the teachers making the problem more aggravated in developing countries

'Nature of researches' is a major dimension, which influences the quality of science teaching to a great extent in developing countries. It is very discouraging that many researches are carried out for the sake of researches and never percolate down to the actual field situations, for which these were conducted. The field realities also suggested that research design, tools, instruments, methodology, etc. are more based on experiences of developed countries rather than generated on field realities It is more in a state of identity crisis and narrow perspective in vision, which creates a wide gap in planning and actual implementation of science programmes The above picture of science teaching in developing countries necessitated to conduct studies more

qualitative in nature, which covers in-depth analysis of variables related to input process and output of the educational process.

Science Education in India — A Retrospect

Chronologically, in India, the past scenario of science education indicated that continuous effects were made to improve its status. The Secondary Education Commission (1952-53) recommended the teaching of general science as a compulsory subject upto grade VIII. The recommendations of the seminar, held at Taradevi were related to quantitative and qualitative expansion of science education in schools. In this series for improvement, in 1964, UNESCO Planning Comission (1964-66) submitted a report on status of Science and Mathematics Education in Indian Schools suggested many improvements in science curriculum at the school stage As a follow up of these efforts, the Indian Education Commission (1964-66) suggested uniformity in the structure of school education and undifferentiated science curriculum. To implement the recommendations of the NPE 1968, as a follow up, NCERT's first major attempt was to prepare the *Curriculum for the ten year school – A Framework* in 1975 and based on this curriculum, new teaching-learning materials were developed. The National Policy on Education 1986 also has specific suggestions for improving Science education in schools Ramamurti Committee was constituted in 1990 to review the NPE 1986 recommendations. In order to improve quality of science,

the committee emphasised on 'Inquiry approach of teaching along with improvement in teacher education programme with the aim to develop scientific temper and independent thinking among the children' As a follow up, NCERT developed the *National Curriculum for Elementary and Secondary Education – A Framework* in 1988, and emphasised that science should be treated as one of compulsory areas up to the secondary stage as it plays a decisive role in *equipping the learner for functional understanding, interpreting and dealing the world in a more scientific way* At the primary level, science education has been viewed as one of the components of Environmental Studies along with social sciences. These recommendations necessitated the review and revision in the treatment of this subject area

Despite all various efforts, the dismal picture of science teaching necessitated viable action in this regard. A working group committee was set up under the chairmanship of Yashpal to suggest ways and means to improve science education The group gave several recommendations The major recommendations, which implemented as schemes for improving science in schools were: content and process approach; improvement of science education in schools, and environment orientation of school education. *The findings of the above scheme, over the years have given a lot of insight and inputs to curriculum planners, developers, implementers, both in content and pedagogy.* The NPE 1986 categorically stated that the implementations of various parameters of the new policy must be reviewed

regularly In the light of the above and based on findings of researches, suggestions of practitioners and issues and concerns emerged at various fora, the NCERT developed a *National Curriculum Framework for School Education* (NCFSE – 2000) The framework raised major curricular issues related to quality improvement at all stages of school education in general and science education in particular. One of the major shifts in this regard is to treat Environmental Studies as one area where Science and Social Science are not compartmentalised into components, rather presented in an integrated manner

The framework also suggested many changes in upper primary science curriculum in order to make it more process based and futuristic in treatment The above changes in concept, status and treatment of science curriculum is one such big effort in this direction for improving science teaching. Despite all systemic efforts, both at planning and implementation stage, the goal to achieve quality science education has been still a distant dream in the developing countries

What do Researches say?

The researches conducted in science education in the past decade, both at the national and international levels have also shown a dismal picture as far as the quality of researches is concerned. The research analysis of science education clearly indicated the need for identification of certain priority areas which can contribute significantly to the futuristic vision of the present day society. The micro and macro level analysis of researches in this area visualise that the research activity has been perceived as *an individual activity, carried out in isolation which is highly technical and driven more in an academic and theoretical fashion.*

A large number of studies findings showed that *'nature of teacher training'* affects classroom transaction a lot The teaching-learning strategies adopted by the teachers in schools did not receive orientation for development of scientific processes among children (Sivadasan, 1988). A study conducted by Singh (1989), entitled, 'Identification of certain skills of science teaching and their effectiveness in relation to their creative ability', suggested that the *quality of science teaching could be raised through rigorous in-service trainings on identified science teaching skills in micro teaching settings for improving science delivery system.*

Further, a study (Begun, 1990) confirmed the Singh's research findings and showed that achievement in science favoured significantly those students whose teachers had attended in-service training programmes more frequently. Use of training package by teacher trainers had positive effect on teaching-learning processes of science teaching in primary classes (Patnaik and Basavayya 1997) A study conducted by Rama (1990) entitled, 'An investigation into the effectiveness of guided discovery learning vis-a-vis the conventional approach to the teaching of scientific concepts in life sciences *showed that the blended strategies (not purely discovery nor conventional) and different models of teaching had brought significant difference in the achievement of science concepts*

It is a known fact that science can best be learnt through doing For making science instruction effective, students must be provided *hands-on-experiences* in science and more so that the primary level Such opportunities could easily be given through inexpensive materials easily available in the immediate environment (Kishore and Agarwal, 1991). The reasons for poor quality of science instructions in primary classrooms was found to be associated with the non-concrete science experiences given to students (Kishore, 1992) 'Quality time' on teaching or opportunity time for learning affected science classroom teaching Teachers had insufficient time to follow two-way child-centred approaches for teaching science (Sarojini, 1993). Various scientific skills or processes were found to be developed in children while teaching science through activity-based approaches like spirit of inquiry, objectivity, courage to questions, problem-solving, decision-making, investigating, scientific attitude and temper, etc. and reduces all sort of prejudices based on sex, religion and language (Siddiqi, 1995)

Introduction of new transactional strategies also affected a classroom transaction A study entitled, 'Impact of new teaching-learning practices' introduced in primary classroom, the findings showed that *teachers had a negative attitude towards new teaching strategies in terms of time utilisation, availability of material It was also found that trained teachers were not even capable to use teaching skills. The content knowledge was also found to be inadequate* (Kehaman, 1990).

Studies conducted in settings other than India have also showed some similar findings Mathew and Smith (1994) in a study entitled "Native American related materials in elementary science institution showed that *students exposed to native related materials which had a more positive attitude and higher achievement than those students who were not exposed to culturally relevant materials.* Classroom grouping of children has been found to be major factor, which affects classroom dynamics. Heterogeneous grouping of students in science can be beneficial to low-ability students partnered with high ability students, without detrimental to be the high ability partners (Carter and Jones, 1994).

The qualitative studies, although conducted a very few in this area showed that multifarious factors have been found to be responsible from input level to the outcome level for poor science teaching in elementary classrooms. The aim of the present study was to understand the reasons of mismatching of implementing science programme in a more analytical manner No such study has been reported in this area especially at the elementary. level in Indian context and, therefore, the need to conduct the present study

The Present Study

The present study was undertaken with the premise that in most of the urban schools where all the basic physical and educational facilities (learning material) are available, the science teachers are also pre-service and in-service trained, qualified and experienced, the teaching-learning time is also adequate still the

status of science teaching in these schools is poor especially in terms of learning outcomes. What are the major factors, which are hampering in teaching of science as a process-based approach at the elementary stage? The purpose of the present study is, therefore, of two fold First, to understand the reasons of mismatching between planning and implementation of science education programmes in order to study the various components/processes/skills necessary for effective science classroom teaching and secondly, to understand the perceptions of teachers, administrators and children about science teaching

Research Questions

The present study addresses the following research questions.

1   What are the reasons of mismatching between planning and implementation in science education programmes at the elementary stage?

2   What are the perceptions of teachers, administrators and children about status of science teaching in schools?

Objectives of the Study

1   To examine the reasons of mismatching between planning and implementation of science education programme in Indian Schools at the elementary stage (What are the common factors?)

2.   To understand the perceptions of stakeholders and implementers on science education programme in elementary schools.

Methodology

The present study being qualitative in nature following the case study approach, therefore, the data collected for the study was more qualitative in nature in the form of words' rather than in the form of numbers. The data, therefore, was collected through variety of ways such as: observations, interviews, excerpt or abstracts from the documents, audio recording,' and finally presented comprehensively in the form of 'case' in words. The major premises for adopting qualitative research were·

- Selection of qualitative research because of the nature of research question, design for the study The research question of 'How', 'What' nature rather than of 'Why' that looks for comparison of groups. Here, the focus is not on comparison of 'cases' (schools) selected for the study rather, on *Characteristics of each case.*

- The study was more of exploratory in nature which needs in-depth observation of a specific situation. In such situations, variables could not be easily identified, theories are not available to explain behaviour of participants or situation

- The study comprises data in the form of words rather than figures and numbers, which covers description of classroom observations, perceptions of teachers, administrators and children towards status of science teaching in schools which also involves description than quantitative data.

● The study involved 'qualitative description' of the situation (classroom teaching of Science) or event in sequential manner (Initial to terminal level) rather than coverage of content of the situation randomly

As implementation of the programme aspect was associated with the study, a variety of school settings needed to be undertaken, different school settings namely. government, government-aided, Kendriya Vidyalayas Sangathan (KVS), multiple cases (nine) were identified, three each from different settings (three government, three government-aided and three (KVS) which are the prevalent categories of schools in the city, Delhi. Thus in the present study, the focus was on to study the status of science teaching in schools at the elementary stage which demanded *description of entire spectrum of situation responsible for the present status. This necessitated to understand 'each case functioning independently'* in different context. In choosing the case for the study, an array of possibilities for **purposive sampling** was followed.

The classroom observations of Classes IV and VII were conducted. The reason of selection of Class IV was, it being middle level (III-V), when the formal writing starts in this subject area Likewise Class VII, being middle level of upper primary was selected to keep parity.

Classroom observations of elementary classes, interviews of teachers, administrators and children were formed the part of the data In all the selected schools, (cases) physical and educational facilities were ensured along with teachers' profile A sample of nine schools distributed in three each category namely government schools, government-aided schools, and K.V Schools, located in the National Capital Territory of Delhi was selected. The sample of the study was as in Table 1 below

The data collection of the study in each school was done in three phases. In the first phase, meetings with principals and compilation of basic information related schools, teacher profiles were done. In the second phase, classroom observations and interaction with the concerned teachers (Interview) of the corresponding classes were conducted in all the sampled schools. In the third phase, the interviews of administrators and children were conducted.

TABLE 1

Contextual category	No of Schools	Number of classes observed	Number of teachers Interviewed	Number of Children Interviewed	Number of Adminis- trators Interviewed
Government	3	18	6	12	3
Govt aided school	3	18	6	12	3
KVS	3	18	6	12	3
Total	9	54	18	36	9

In order to make qualitative data more reliable, three consequent observations from each class were made In *toto*, 54 classroom observations were conducted The data collected through audio recording of the classroom teaching was transcribed, categorised into different dimensions and later analysed The Secondary data from school records. attendance registers, teachers' diary, etc. were also consulted to support the classroom observation's primary data.

Data reduction was done by the process of selecting, focusing, simplifying, abstracting and transforming the 'raw data' into structured or categorised data For interpreting the results frequencies counts were also done in the study for further reducing the qualitative data.

Major Findings

The findings of the study have been presented keeping in view the research questions formulated for the study.

What are the reasons of mismatching between planning and implementation in science education programme at elementary level?

- Although, the *basic educational facilities such* as blackboard, teaching-learning material, science kit, science laboratory, library, etc were made available in all the three-category of schools, still their access in the transactional process was found to be missing in all the sampled schools. *The poor maintenance of these facilities was the major concern as substantial and timely funds were not made*

available, which created school environment dull and depressing for children. The procurement procedures of the material was found very rigid and more administrative for teachers, which necessitated them to avoid the use of material in the classroom teaching. The science laboratory was found as an *ornamental thing* for children even at the upper primary stage Except Kendriya Vidyalayas (KVS), the high pupil teacher ratio (PTR) in all the sampled schools was found to be very high (1.65)

- Classroom organisation was found to be traditional and thus row seating was found surprisingly dominated in primary and upper primary classrooms in all the government and government-aided schools This created science as a non-interactive exercise in both the grades. However, the Kendriya Vidyalaya schools made some efforts to make classrooms interactive and participatory through group seating only in primary classes and this was also not used as norm.

- *Although teaching-learning materials cover a wide range for teaching of science at the elementary stage,* the dominant use of textbook was observed in the science classrooms in all the sampled schools. Use of concrete material, teaching aids, environmental objects, displayed material, science kits, supplementary reading material which enrich the teaching-learning

process was an occasional feature of these classrooms *Out of 54 classroom observations, only 19 classrooms used such material other than the textbook*

- Teaching to children in a stipulated or allocated time period is not a random exercise as it perceives by the teachers in these 'schools *Teaching to lower stage learners (both primary, upper primary) was found to be perceived as a casual and unplanned exercise by the majority of teachers in the schools.* Teaching of science (Environmental Studies) was treated as one of the curricular areas like Hindi, Mathematics and Sanskrit (upper primary) by majority of teachers in all categories of schools *The dominant reason reported by the teachers for their non-preparation prior to teaching was lack of time?* Contrary to this, the data compiled from schools record showed a different picture *In almost all schools, the number of days and time period per year was found higher (+220 days) as compared to the National Curriculum Framework for School Education 2000 which is suggested 180 days* Out of 54 events or situations, none of the observations showed any preparation of teachers. In the observed events, in the classrooms *about 60 per cent events showed teacher confirmed or asked from their students what to teach next in the class*

- Linking new knowledge or concepts with the previous knowledge is a cardinal principle of concept formation for concrete stage children It was depressing to observe that *out of 54 observations, more than forty per cent lessons were initiated without linking the new text with the previous knowledge.* The lessons used in the introduction of topic with previous knowledge, were more mechanical and repetitive (based knowledge) rather than replication or horizontal expansion of learnt knowledge

- *One-way interaction was dominated in classroom transactions as teachers found to be in textbook method (Reading) or question-answer method* However, in the case of Kendriya Vidyalaya Sangathan (KVS), child-centered approaches of teaching-learning were followed by the teachers, which encouraged more children's participation in the teaching-learning process It's a very depressing that teachers who are teachings science classes are not even oriented about elementary stage and/or child friendly approaches. This leads to poor transaction in the classroom. While implementing new science programme, teachers need orientations before introducing in the system But in actual field situation, it was not apparent. The teachers were unable to implements all interventions/inputs which they received

Why there is a mismatching between planning and implementation in Science Education Programme at the elementary stage?

Unlike other curricular areas, the science education has an ambivalent place in the curriculum in terms of

curriculum organisation and its transaction The science curriculum, which is planned for the classroom transaction may not be translated in a way, which has been proposed in the curriculum The reasons of this gap are manyfolds. The curriculum planning is a continuous and on-going exercise A large number of factors, which affect the curriculum, may not be considered due to contextuality This is the reason a very good planned curriculum when translated into the field may not be found very successful The field realities showed that the teachers in the classroom situation could not be able to follow the processes or practices that were suggested in the curriculum The reasons found were non-availability of time, high pupil-teacher ratio, non-availability of teaching-learning material and many administrative reasons, which were impeding its implementation in the classroom Similarly, curriculum of primary stage also suggested a well-planned teacher plan and prior preparation for activities to be organised in for classroom, *But in none of the schools, it was found that neither the teachers prepared their plans for teaching nor any prior* preparation for activities was organised by the teachers both at the primary and upper primary levels. The research trends in science education also suggested *that there is a significant need to change methodology of transaction of the content in the classroom teaching.*

One of the important reasons of mismatching between planning and its implementation of science programme was also due to administrative factors. While planning for new science programme,

teachers were oriented before introducing in the system. But in actual field situation, it was not apparent The teachers were unable to implement all interventions/inputs, which were given in orientation courses to the teachers. The reasons were purely administrative In none of the schools teachers had the freedom to adopt innovative approaches in classroom transaction, follow own criteria of learners evaluation For every academic work, teachers had to take permission from principals.

To get the clear picture of school scenario with reference to science teaching, the head teachers of the sampled schools and Zonal Incharge (Deputy Director, North and East Zone) were also interviewed The reasons told by the teachers responsible for poor science teaching in schools were found very much different, what had head teachers mentioned The teaching-learning time or time on task for science was found to be inadequate reported by almost all the teachers While sufficient time was reported by administrators in all the sampled schools *"They added that in primary classes, teachers normally finish their course by December, and final examination school organises in March. If teachers have inadequate time then how could they finish the course, before time?"* The teacher Diary data also showed, confirmed this fact The lack of time due to some administrative duties and assignments, given to teachers during the session was also reported by government and government aided teachers But the discussion with the administrators showed a gap in the information Administrative tasks are normally given during holidays or if given

during the school timings than these were not given to all teachers as mentioned by the administrators *The above micro-analysis of teaching-learning time clearly indicated that teachers do have sufficient time for teaching, but they could not be well-trained 'on time management' issue and secondly, having a negative attitude for systematic change as they did not get any incentive for good work The teaching-learning material was another component of science teaching, which provided controversial date from them.* The support material such as teaching aids, learning aids, science kit, and other concrete material have never been a problem as mentioned by head teacher except in the government schools. Difficult procedure of getting these materials, which was mentioned by the teachers, was also not true from head teachers' point of view. *The procedure of getting the above support material is not very administrative. But this requires pre-planning: what material is required, whether material is available in school or not, etc which is lacking in our teachers teaching plans, as mentioned by head teachers. Teachers' training or capacity building of science teachers was also viewed very differently by the administrators,* The in-service courses, which improves teachers proficiency and provides on-the-job inputs, normally organised by the authorities in vacations (summer or winter). The organisation of programmes in this period does not like by the teachers and their participation in these programmes thus found very low. They did not comment on quality of the training programmes, but they mentioned that there is not much difference in their practices even after

attending these courses This issue raises two points *Firstly, teachers might not be getting practical knowledge of organising classrooms activities, and secondly, they don't want to do efforts.* All the administrators were agreeing that academic inputs which showed an ongoing exercise is lacking in our schools *The reason being we have never given any training on these aspects What teachers' organise or conduct in the classroom, we normally accept in a positive way.* According to them, they also need orientation *The mismatching between the practioners and the manager could be one of the biggest contributing factor responsible for poor science teaching in schools particularly at the elementary stage*

The autonomy and flexibility to teachers for handling science classes, administrators had strong view that in schools system, flexibility in timetable and resources could not be possible. The autonomy to teachers to deal with curriculum (any topic) also restricted as prescribed prospectus comes from the state education department. They agreed that some autonomy and flexibility should be given to science teachers as nature and approaches of this area are very different from other curriculum areas *The status of science teaching in schools is certainly deplorable which is multifarious in nature But the teachers, who are the sole players of this task, have a very important role to play. There is a need to change attitude of teachers towards their task which is very casual rather than goal-oriented, which is very unplanned rather than planned and which is very narrow rather than holistic and comprehensive.*

What are the perceptions of teachers, children and administrators about Science teaching?

Although, at the primary stage, the class-teacher-system was prevalent in government and government aided schools, yet it was not liked by the teachers. The sampled teacher had the view that *class-teacher-system has its own merits as it provides holistic view of the learners' behaviours, still such system dilutes the quality of science teaching to a great extent. The medium of instruction was another important issue, responsible for poor science teaching as reported by the teachers.* It was surprising that none of the teacher liked the English as a medium of instruction for teaching science at the primary stage. The analysis of teachers interview clearly brought out the fact that the children at this stage are not prepared to receive knowledge other than the mother tongue. The classroom observation data also supported this finding. *Parental aspiration and demand of the society compelled the institutions to adopt this approach*

Time on Task (opportunity time for teaching-learning) and time management were other issues, which were found controversial for teachers. In all the sampled schools, *inadequate time was reported by the teachers for child-centerd approach.*

The analysis of number of working days, (not less than 200 in any category of school) reported by the authorities did not match with the findings. The classroom observations data also confirmed that teachers had adequate time.

The present textbooks of Science have been developed for children could not serve the purpose, as the text presentation is not tuned with children's thinking level as reported by the teachers. They also mentioned that the level of language, terminology, structure of sentences, concepts and its presentation in the text clarity in visuals, labelling, etc used in the textbooks in both grades were not parallel with the learning levels of the children.

The teachers accepted the importance of development of processes/skills among elementary children but they themselves were not clear about their skills. The prominent reasons reported by the teachers were inadequate qualitative focus on pre-service and in-service courses, lack of on-site support and guidance and non-availability of teaching-learning support material to teachers. They viewed training programmes were more theoretical dogmatic and non-relevant with daily life experiences. The subject, Environmental Studies at primary level and science, at the upper primary stage was not found popular in government and government aided school as compared to KVs. The children of government and private schools did not like science subject at all, in a way it was treated in the sampled school. *The prominent reason of disliking this area in these two schools was lack of activities and outdoor activities. Contrary to this, the KV students liked this area because of its approach which their teachers were adopting.* It is very astonishing to know the perception of the children that good science teaching means more outdoor activities, reading opportunities in the classroom, dictating question-answers on the blackboard, translating English

into Hindi, opportunities for writing on blackboard and, getting opportunities telling children to bring material from lab Contrary to these yardsticks, the KV students *mentioned that good science teaching means; more activities in the class, More quiz or competition exercises and more group work and less seat work*

The analysis of the above observation clearly visualise that there is a gap in the transactional procedures in different schools which needs proper treatment while working in-service training programmes for teachers Children did not like the science textbook both at primary and upper level. The reasons reported by them were—boring chapters, non-labeled visuals and dull exercises, non-stimulating activities, convergent activities/questions rather than divergent (creative questions) and limited scope for out-door activities The most important characteristic of good science textbook reported by them was more visuals and less content, more quiz and puzzles and no descriptive questions

The administrators had the view that academic inputs which should be a regular and on-going exercise of the schools has been lacking in our schools. They added, "we as a school manager provide them such inputs but we have never given any training on these aspects. Whatever teachers conduct in the classrooms, we normally accept in a positive way." The mismatching in ideology between the practioners and the administrators could be one of the biggest contributing factor responsible for poor science teaching in schools particularly at the elementary stage The autonomy and flexibility to teachers for handling science classes, administrators

had strong view that in schools system flexibility in timetable and resources could not be possible. The autonomy to teachers to deal with the curriculum (any topic) also restricted as prescribed prospectus comes from the state education department. They agreed that some autonomy and flexibility should be given to science teachers as nature and approaches in this area are different from other curricular areas.

Implications of the study

Although, regular reforms and initiatives at all levels' input, process and output have been done to improve the status of science teaching, the results are not very much rewarding and encouraging *These attempts broadly were made more in restructuring science education programmes rather than some generic changes at the micro level.* In these shifts or restructuring the science education programmes, the core issues and concerns have not been addressed in a way as these are required Some of the implications which emerged from the findings of the study are.

Teacher Prepartion – Pre-service

The findings of the study and many studies conducted in this area clearly depicted *that pre-service programmes were found to be more theoretical, 'lope-sided' and ill-fitted as far as the teaching of science was concerned* The practice teaching in the pre-service courses should not be viewed in a narrower sense. This should be a two-day exercise. *The practising teachers should also be given full freedom to express their views The supervisors must understand the practising teachers' 'point*

of view' as well and their queries and it should be a part of interventions of their programmes. Thus, the entire practice teaching exercise (and/or curriculum) needs thorough metamorphosis in terms of its ideology The curriculum of primary and upper primary teachers with reference to pedagogy and content should be viewed holistically and comprehensively.

In-service preparation

The provision of in-service teacher preparation programme should be viewed as a continuum of professional development of teachers No doubt, a number of planned initiatives have also been made to improve the programmes with reference to its practicability in the system.

Relevance of training curriculum in terms of *trainees' need* is another pre-condition for launching science-subject training programmes *The field level discussions with teachers in terms of outcomes of in-service programmes clearly brought out the fact that these programmes had low relevance for practising teachers* The *pre-scriptive policy* of in-service teacher training rather than *need-based policy should be* reviewed holistically. *The in-service programme should be viewed more as a mutual symbiotic exercise between recipients and at the donor level. The entire training cycle should be considered as a two-way activity Trainees' participation in the training cycle not only provide content to teacher educators but also provide scope for their learning* Thus, while planning in-service training courses, the scope for sharing of experiences of experienced science

teachers (successful or novice teachers) be viewed in a broader perspective and should be *used a means and not as an end itself*

Administrator and Supervisors

No doubt, teaching phenomena is different across national boundaries, regional or local level schools and even in classrooms Teachers who teach in these situations also have different backgrounds and preparations, and ideologies But the role of the administrators or teacher educators has always been viewed in a very limited and routine way *The past learnt experiences of teachers received from pre-service and in-service courses, have not matched with the administrator's thinking. This created a gap between both the groups in terms of execution of task at one end and management on the other* To bridge the gap, there is a *need to understand teaching in a holistic way rather than viewed as a compartmentalised, assigned sequential activity. The successful innovative experiments of teachers are definitely a sound methodology or strategy to develop professional skills It is also a very successful tool to understand teachers' knowledge*

Teacher educators/Subject experts

The findings of the study suggested that the inputs given to the teachers during their in-service or orientation courses, could not be found very beneficial in their classroom teaching The reason being, that most of the inputs they received, could not be matched with the classroom teaching and thus not be translated into practical field situation.

Almost in all the events, during the focused group discussions, common issue that emerged was, **How Science could be taught as a process based subject?** The classroom observation data also confirmed that science **has been handled in elementary classroom as one of the ot** Training big gap in the transactional process is created right from the teachers preparation phase till she/he is in-service Teacher educators have to play a significant role in this endeavour. Being limited and one sided role in the training courses make the programme non-effective There is a need to *create academic sharing forum at the school level, where senior or subject experts could play a very vital and viable role to provide regular, on-site supports to our science teachers*

Improvement in science teaching is not a one-time affair It should not be conceptualised from its very nature but it should be visualised from its implementation aspect as well There is a need to improve our regular inputs not only at outcome level but at the input and process level as well.

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Fostering Peace through Education

S.Ramani*

Abstract

This article highlights the need, content and purpose of Peace Education in India and to Foster Peace through Education. This study begins with the definition of peace and focuses the issues that India is facing This paper emphasises the importance of Peace Education for an individual at three levels

Level-1: *Peace Education should begin at home where there will be a discussion on how a child grown in different atmospheres would react as an individual to community.*

Level-2: *Peace Education at the Societal Level, where there will be a discussion on how an individual can contribute to the smaller unit of community that is one's own country*

Level-3: *Peace Studies at the inter-societal, inter-regional and at the international level, where there will be a discussion on identifying oneself with the world as a larger community, the role of women in all the above levels and concludes with women's contribution to peace process Efforts taken by various peace educators are also discussed*

Key Words. Peace Education, Multi-cultural Education, Human Rights Education

Introduction

Children acquire through mass media knowledge about the on-going wars, the possibility of nuclear war and ecological catastrophies. The basic questions arising in the mind of a right thinking educationist would be:

- How should schools deal with peace and war?
- How can schools be instrumental in raising the possibilities for peaceful co-existence in future?

- How can we provide some form of education for peace?
- How can we prepare our young minds to live in peace with fellow human beings?
- How can our future citizens of the globe be prepared to assume responsibilities?
- How can we train, develop and foster peace through education?

In India peace education is introduced at elementary level through

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subjects like Environmental Science and Moral Science which is inadequate to kindle the awareness of children about the value of life in peace.

"Peace can be defined as a calm state of human mind, where one can feel, find, foster and transmit this state of mind of to fellow human beings"

Gandhi who was known for his Philosophy of peace and non-violence was not only the Father of India, but he was also loved and revered throughout the world.

Indians are basically peace lovers, co-existing with people belonging to many faiths India is rich in tradition and culture but has to combat with major issues relating to drug trafficking, environmental threats, organised crimes, refugees, small arms, land mines and terrorism. There is also a need to address the issues relating to China, Pakistan and Bangladesh. Tensions prevail in Kashmir, which is an integral part of India India's major concerns are military and defence and military power balance

A huge multi-lingual and multi-cultural country like India needs to focus on national integration Indira Gandhi, former Prime Minister of India, who was a symbol of women's' empowerment laid down her life for national integration The prevailing situation where acts of terrorism and other negative happenings indicate the need to foster peace education to children in the school level If peace education is well-begun with young children, there will be a minimum need to fight these negative happenings.

Like Charity, Peace Education should also begin from home. A home is a blissful place for children, where they enjoy their freedom of expression Parents are the first teachers in fostering peace and love in an informal scenario The mother takes the role of the peace educator This is the first level, where women can begin their goodwill mission In the formal level, the teachers should take the responsibility of creating a conducive atmosphere How to create an atmosphere of peace and tranquility for children at home? Children are mirror images of ourselves and it is in their best interest that we should inculcate values so that it is rightly transmitted to them The following are the different atmospheres in which children grow and their reaction to community

Fostering Peace Education at Level-1

Dr. Cleve Harley, Child Psychologist and Counsellor in an orientation programme for parents of Don Bosco Matriculation Higher School, Chennai, India highlighted the following growing environments of children and advised parents thus.

- *If children are brought up in an authoritative manner, they do not feel free to communicate*
- *If children are constantly criticised, they grow with contempt*
- *If children are discouraged, they lose confidence*
- *If children are brought up with hate, they learn how to hate others.*
- *If children are humiliated, they learn how to insult others.*
- *If children are shown hostility, they learn to be afraid.*
- *If children are jealous of their own siblings they grow to be envious throughout life*

- *If children are filled with self-pity, they grow with negative self-evaluations*
- *If children are loved, they learn to love others*
- *If children live with serenity, they learn to live in peace*

If children learn to live in peace and love, they radiate the peace and love to people around them Hence, it is very important that children need to be targeted initially at the first level that is home. Parents, who can be instrumental in their children's development, can achieve this process.

Yoga can help the children focus their attention and develop concentration. Though many studies have proved that yoga can improve the performance level, it also trains the children's ability to remain calm. Women play an instrumental role in teaching values to children at home In a typical Indian joint family, three generations live together under the same roof This is an excellent example of peaceful co-existence, where children are provided an opportunity to learn at the *first level.*

Fostering Peace Education at Level-2

The second level of fostering peace education begins at school, where their formal educators will introduce their rights, duties and responsibilities towards the smaller unit of society.

The purpose of fostering peace

The purpose of fostering peace through the medium of education is:

(i) To create awareness of one's own planet,
(ii) To facilitate the future citizens of the world to function as global citizens,

(iii) To enable to change the present human condition on incremental basis, and
(iv) To effect a change in human consciousness

Suggestions for a Curriculum in Peace

Peace Education should start aiming at the targeted audience at the elementary level The mode of teaching may be through audio-video cassettes, staging plays, showing films and conducting weekly classes by peace educators in mobile vans Just like any other subject, Peace Education needs to be initiated at elementary level

Focus Activity aiming at Learning by Doing

Individual Activity: Children must be encouraged to do a project work on Peace, collect pictures and make individual presentations of their works.

Group Activity: A group activity may be given as assignment to children belonging to the same age group to create awareness of wars violence, organised crimes and terrorists' activities.

Collective Activity: Schools can organise a stage play, video filming and community singing to create awareness among children regarding the dangerous situation of the world, the effects of wars and environmental hazards

The Need for Holistic Approach towards Peace Education

(i) There should be proper allocation of financial resources for implementing Peace Education Programmes

(ii)   Highly motivated and energised teachers should carry out this mission.

(iii) Peace Education Programmes should be conducted periodically

(iv)   Hatred, vengeance, eye-for-an-eye attitude needs to be strongly condemned

The learning objectives should be the following:

(i)   Interactive Participatory Learning,

(ii)   Learning to seek self-knowledge,

(iii) Egalitarian Scenario, out of classroom and not within the four walls of the classroom.

Students need to be motivated for attending Peace Education classes regularly by conducting programmes and activities that interest them

Children should be encouraged to contribute articles to school magazines on Peace Education. They need to be motivated to run a Peace Club The general members of the Peace Club should be free to elect their own Club Chairpersons. Fortnightly gatherings, meetings and discussions should be arranged with the help of the teachers

The curriculum should cover both Positive and Negative Peace Education. There are many researchers who oppose and reject the distinction of two major domains of Peace Studies

Special mention is made about a leading opponent of this specific formulation of positive and negative peace, Kenneth Boulding the most distinguished "Father" of American Peace Research. (Betty A. Reardon, 1988 p. 11) whose concerns he mainly in the reduction and elimination of warfare and not in discriminating the Positive and Negative Peace

What is Positive and Negative Peace Education?

Positive Peace Education

Environmental Education: The aim of Environmental Education is to create awareness among children about the destruction of global environment, the ecological threat to our planet that has developed in recent years, the distribution, conservation and preservation of natural resources, maximum utilisation and minimum wastage of natural resources, the Demographic situation, Population awareness, the uneven distribution of natural wealth Schools Celebrate the World Environmental Day on June 5th every year and organise essay, slogan and drawing competitions for children to create awareness of the Environment Mostly this type of awareness is action-oriented education, learning by doing and simple project work for children can be given These projects need to be fun and creative both for children and teachers In a multi-lingual, multi-cultural country like India, personal peace can be fostered through spiritually, creative independent modes blending with local culture

Negative Peace Education

Children should be introduced to negative peace education. The effects of the arms race must be explained to them The piling up unwanted arms is only a burden to a country's exchequer, creating a vacuum and blocking progress Children can be given an opportunity to campaign against accumulation of arms. Young Citizens of

the globe should be taught the effects of the post war, the economic crisis after the war and the loss of precious lives Finally the young mind needs to be allowed to reflect on the following questions·

- What do the nations gain from war?
- Why there should be war?

The future citizens of the globe need to be taught to think that the world is not going to stop if there is constant war between the countries Children should be made aware that personal enmity is the root cause of violent conflict Personal hatred is some kind of tension flaring up and becoming blown up in purposeless petty fights and thus ends in life-long enmity Such enmity is highly subjective, individualised and is capitalised by people of vested interest. Children should be always encouraged to live in co-existence with the other members of the society, which would be the personal contribution of the self at the Second Level. In this way, they would learn not only their right to live as honorable citizens but also their duty towards such a peaceful co-existing living The Second Level of Peace Education should aim at living in harmony and not to harbor any personal prejudice towards any group/ethnic/colour/caste/religion and language

Class

A class should be divided into age-wise squads. Each squad should have a Squadron Leader, who takes charge in turns. In this way, each child gets the opportunity to serve as leader The Squadron Leader is responsible for conducting meetings within the squad and the Collective Squads Meeting. The meetings are initiated with discussion about the global situation and talk about the ways and means to improve the present trend of living in society.

In this way, each child will develop:

(i) Organising ability
(ii) Public speaking skill
(iii) Leadership quality
(iv) Analytical thinking and
(v) Team spirit

The above activities would take the children above and beyond the four walls of the classroom. Exchange of Peace Educators is a welcome proposition to know the peace education situation and the trends of the other countries in the world.

Fostering Peace Education at Level-III

At the Third Level, Peace Education needs to be fostered at inter-societal, inter-regional and at the international levels, wherein the peace educators train and develop the children in terms of their identification with the world as a larger community, larger unit of society. This can contribute to the larger unit of society by inculcating

(i) Multi-cultural Education
(ii) Human Rights Education

(i) *Multi-cultural Education:* In Western Culture, Multi-cultural Education is the study of the peoples of non-Western and minority population living in the country. In the Indian context, all the above concepts have been introduced in the elementary level in Social Study Course from Class I to Class V Multi-cultural Education according to the Indian context would be a study of various

cultures of people of India because India is a Multi-cultural Society At the elementary level, children learn the different cultures of the Indian society; the languages spoken by the people of different states, the festivals celebrated locally, dress and food habits The horizon of this multi-cultural knowledge should be extended and widened to the study of people of the other parts of the world which will make a significant impact on the young minds and lead to the acceptance of different cultures that exist in different parts of the world. This would be a beginning to identify oneself with the world as a larger community

(ii) *Human Rights Education·* Human Rights Education is an ideal vehicle through which, we can introduce concepts of globalisation and world problems into standard History, Geography and Social Study Courses Each individual born in this planet has the right to live with dignity and honour Although a brief outline of how peace can be fostered through Education is given, it is still a challenging, uphill task for implementing it as a specific curriculum given that India is a country of multi-lingual and multi-cultural population However considering the vastness of India, it is important to introduce peace education in schools as a separate curriculum.

Here special mention is made on the efforts of Mabel Aranha, who has been involved in peace education in India since 1986. She developed a peace education syllabus after extensive discussions with teachers for Classes V-VII This was tried out with children over a period of three years. The objectives of the programme were·

(i) To instill a desire for peace and harmony and a dislike for war and violence,

(ii) To promote an understanding of co-existence and interdependence,

(iii) To foster an appreciation of differences between people of various religions, states and countries.

She also attempted in 1992, to introduce peace education at the Bachelor of Education Degree Course in a progressive teacher training college She created a positive attitude and developed a comprehensive resource on peace education for the college. The new syllabus for the Bachelor of Education degree programme of the University of Madras has introduced Human Rights as an Elective paper from the academic year 2003-2004

Later Ake Bjerstedt surveyed the situation of Peace Education in different countries He interviewed several leading Educationists of different countries of the world He interviewed Ms. Anima Bose of India, who voiced her concern over the absence of Peace Education not included in the curriculum of mainstream education However, she felt that in a country where Gandhi was born, there are several universities that include some aspects of Peace Education in an inter-disciplinary way and the schools also have Peace Education in an indirect way

Therefore, Peace Education is the needs of the hour and women have a significant role in fostering it to children at various levels. Let us live a peaceful life and transmit peace and love to the world through children.

While thinking of peace, one cannot avoid thinking of non-violence, the weapon of the Father of Indian Nation, Gandhi, *Messiah of Peace* He said, "Non-violence is the greatest force at the disposal of mankind. It is mightier than the mightiest weapons of destruction devised by the ingenuity of man" Gandhi also regarded that women can play a significant role in promoting peace and non-violence He observed "Women are stronger than men to make exploration and take bolder actions in non-violence There is no occasion for women to consider themselves as subordinate or inferior to men Woman, the companion of man, is gifted with equal mental capacity If by strength is meant moral power, then woman is immeasurably man's superior. If non-violence is the law of our being, the future is with women. Woman — I hold is the personification of self-sacrifice. But unfortunately, today she does not realise what tremendous advantage she has over man".

Children need a safe and secure place to live Let us make this planet a safe home for future children Let us work together to make this planet a peaceful and beautiful place to live for future citizens, because they deserve it and this is the only place of human habitation

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Using the Technology for Monitoring Sarva Shiksha Abhiyan (EFA)

Teleconferencing on Appraisal Mission

NARESH KUMAR GUPTA*

Abstract

The present paper aims at sharing the experiences of using teleconferencing for Appraisal of Sarva Shiksha Abhiyan (SSA) in eighteen DPEP States of India on 3 April 2003. The attempt and the feedback from these states on this innovative use of teleconferencing has been highlighted in this paper besides the components of this appraisal mission The teleconferencing besides taking stock of the SSA situation in states from the studio in New Delhi, also responded to queries and issues raised by the stakeholders in different states. The exciting experiences opened a new panorama before the administrators to go beyond face to face appraisals Key issues discussed and the experiences/feedback of the participants is the theme of the paper Issues surfaced during the course of discussion, the opinion of the participants on various aspects are other highlights of this paper Should time, money and energy on travel continue to dominate appraisals is perennial issue for discussion?

Key Words: *Sarva Shiksha Abhiyan* (Education for All), Teleconferencing.

Transformation refers to some degree of measurable change observed in the quality, nature or the trend of a phenomenon. Pioneered offerings in elementary education through district specific contextual interventions, it has experienced some level of growth. While geographic, socio-economic circumstances, problems of educational imbalance, the establishment of non formal or adult education continue to dominate the system but diffusion of educational practices and strategies and growth of entrepreneurial spirit that grew its roots in education too have led to this transformation in the system

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The escalating number of students, the decline in funding to support educational system, the rising cost of travel and transportation, the large pool of frustrated demand for education with the realisation of education as a fundamental right are the issues at hand to be tackled

Let us refer back to the traditional objectivist pedagogy – teacher and context-oriented, examination driven, wherein, we have a restricted repertoire of teaching and presentation styles Can we expect such a system to cater to learner centred progress of learning? Teachers do their work in isolation from colleagues without an opportunity for any clarifications The penetration of the technology into teaching-learning process has a profound bearing how interaction takes place socially   In an outcome based, learner centred life-long learning environment and one which can be technologically advanced, there certainly is a need to consider a variety of communication approaches   The traditional learning process or the pedagogy does not assign any significant role to interaction in the process or progress of learning   There is a little scope for regular monitoring of the progress of the process, as it is individual with one to one through direct contact or the data sent by post It needed the high officials travelling large distances to reach head quarters for the purpose of monitoring. It not only required money, time, energy and manpower but also lead to the absence of the officials from that places leading to administrative difficulties.

Technology has opened more diversified and socially rich interacting contexts through the shared use of computers, peer tutoring/interactions/ correspondence via internet, networks, e-mails and through more extensive use of telecommunications. Looking at the broader range of available ICTs, they have been put to variety of use   The narrow telecasting/broadcasting for teaching purpose has been in use in India for almost last forty years in the form of radio/television put to educational use Broad telecasting being put to the use in education in variety of forms in school TV lessons, interactive lessons, etc , Internet access and computer aided instructions were other forms of interactive teaching-learning communication technologies, though, available but put to restricted use in Indian education system.   In present paper we would share an experience of broad-telecasting mode which, though is only in its process of inception, but has been extensively used in past one decade.

Beginning to use teleconferencing in teachers training, an idea struck in Distance Education Programme (DEP) of District Primary Education Programme (DPEP) to use the medium of teleconferencing for getting a feedback The idea was put into action with first ever such a use of teleconferencing for "Appraisal of *Sarva Shiksha Abhiyan*" on 3 April, 2004 for Ministry of Human Resource Development (MHRD). The teleconferencing focussed on the following six objectives

1   To share the experiences of different states related to planning, implementation and monitoring of *Sarva Shiksha Abhiyan*

2   To analyse the scenario in the states with respect to UEE

3.   To take stock of the progress made so far us under SSA

4   To layout the road map for UEE in the coming years of the plan period.

5   To enable the states to highlight the problems being faced by them in the implementation of the SSA

6.   To suggest remedial measures to improve the implementation of SSA and achieve/ meet its goals.

Key issues discussed during the teleconferencing were·

1.   Whether the out-of-school children in the age group of 6-14 years have been identified by the State?

2.   Has the State evolved strategies for covering all the out of school children in the AWPBs of 2003-04, especially in view of the SSA goal that all children should be in school by 2003?

3.   What is the status of new primary and upper primary schools sanctioned under SSA? Have these schools been opened and construction activities started for the same?

4   What steps have been taken by the states for filling up of teacher vacancies and what is the planning for para-teachers?

5   What has the state planned for quality improvement, especially with regard to teacher training, textbooks and assessing the pupil achievement levels?

6   How effective is the community participation? Have the VECs and MTAs being formed? What is the mechanism and kind of feedback received from these committees?

Participants

The teleconferencing was attended by Secretary (Elementary Education, MHRD), and the officials associated with SSA at the centre for appraisal, whereas, in all the eighteen states on other hand were their Secretaries (Education), State Project Directors, Directors (SCERTs/ SIE/SIERTs), Principal, DIETs, Deputy Project Officers, Deputy Commissioners, Chairman SSA Committee, etc with nearly 370 persons attended the programme on behalf of States   The panelists included Prof H.P Dikshit, Vice Chancellor, IGNOU, Sh S C. Tripathi, Secretary (EE& Literacy), Sh S C. Bose, Ms Vrinda Sarup; Jt Secretaries, Prof. SVS Choudhary and other senior officials Inaugural address was delivered by his excellency Justice Shri Anshuman Singh Ji, Hon'ble Governor of Rajasthan   Besides appraisal of SSA in the States the panelists also responded to the queries raised by the State participants pertaining to their difficulties in implementation of SSA.   Various managerial and administrative aspects of SSA dominated the interaction

The analysis of the feedback received from 241 participants of various centres on a questionnaire revealed the following opinions regarding this teleconferencing

77.59% of the participants were said to get more information/knowledge on SSA through this teleconferencing where as 14 11% could not get it 8.30% did not respond

TABLE 1
Getting Additional Information

Responses	Total Responses	Percentage
Yes	187	77 59%
No	34	14 11%
No Response	20	8.30%

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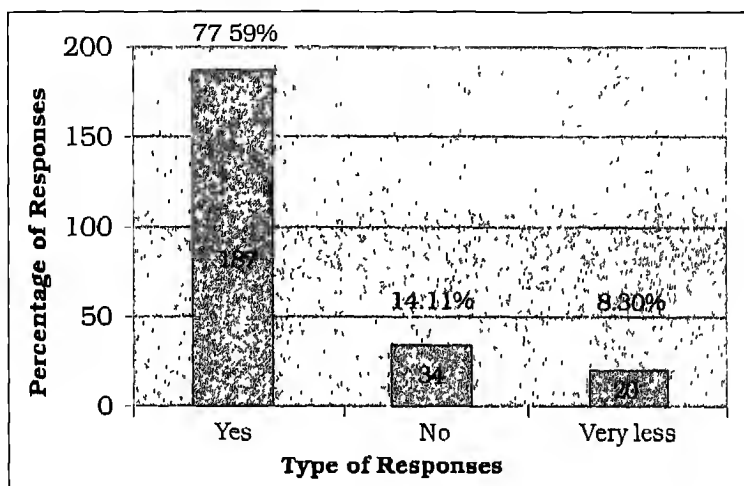
- Most of the participants (92.53%) found the content covered as specific, adequate, satisfactory and informative
- More than five per cent participants opined that this was very less due to shortage of time
- About two per cent participants were neutral regarding the response of this question. Few of them suggested that new areas should also be covered such as child labour and reply of the question should also be followed up in the field
- Some of the participants were of the opinion that it should be more comprehensive. It was also suggested that discussions should be held in detail
- One of the participants responded that this programme brought about right picture of the content and accepted that whole programme was informative and unique
- Apart from the duration of teleconferencing the participants agreed to the strength of using teleconferencing and has been supported by them to be a powerful medium.
- Eighty per cent participants agreed that teleconferencing was useful for all the participants.

TABLE 2
Opinion on Contents Covered

Responses	Number of Responses	Percentage
Yes	223	92 53%
No	04	1 66%
Very less	14	5 81%

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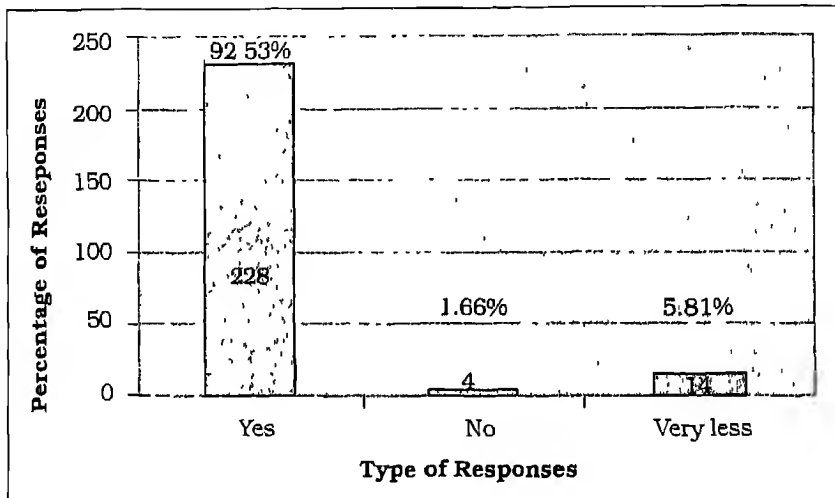
- About four per cent participants were not agreeing with the usefulness of the topic Some of them emphasised that more attention should be given to quality.
- One of the participants felt that this can be used in preparing Annual Work Plan and Budget (AWP&B) 2003-04

- About sixteen per cent of the participants did not respond
- Participants suggested various ways it could be used and the data suggests the agreement towards usefulness of teleconferencing.
- More than sixty-nine per cent participants reported that these strategies were adequate

TABLE 3

Responses	Number of Responses	Percentage
Yes	194	80 50%
No	9	3 73%
No Response	38	15 77%

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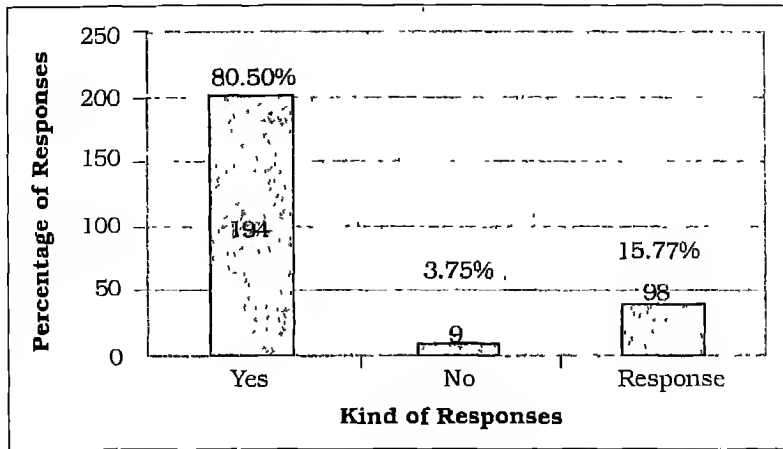
- About twenty seven per cent participants did not respond.

- More than three per cent participants felt that these were not up to mark and emphasis should be given on its visual part

- Some of them suggested that question answer strategy should be adopted.

69 71% of the participants have found the strategies used in teleconferencing to be adequate.

TABLE 4
Opinion on Strategies Adopted

Responses	Number of Responses	Percentage
Yes	168	69.71%
No	8	3.32%
No response	65	26 97%

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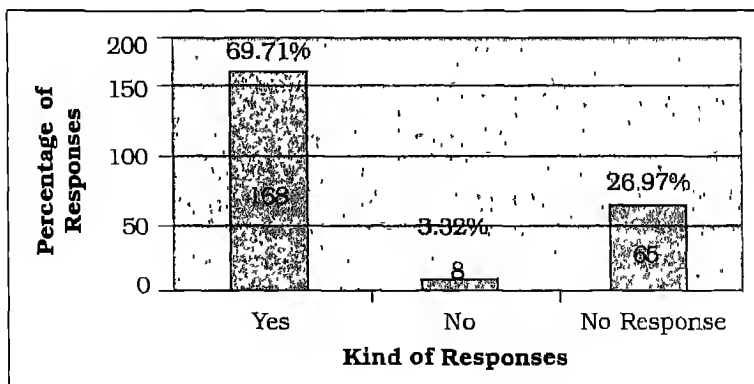
TABLE 5
Usefulness of Reading Material

Responses	Number of Responses	Percentage
Very useful	75	31.12%
Useful	147	61 00%
Not useful	6	2.49%
No response	13	5.39%

N=241
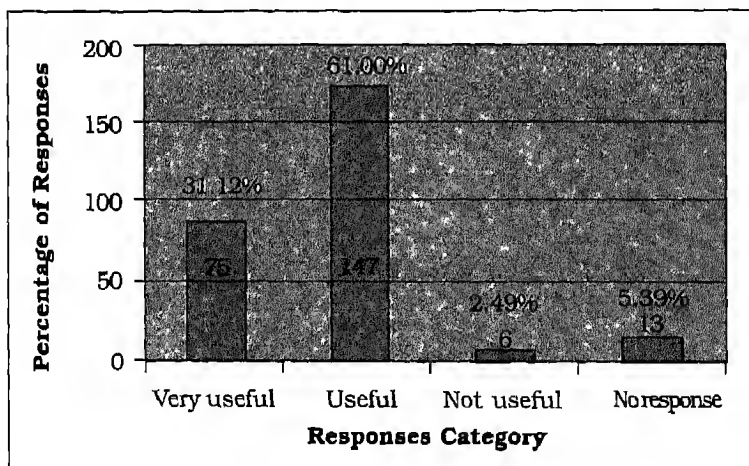
- More than thirty-one per cent participants reported that reading material was very useful.
- Sixty one per cent participants said that it was useful
- About three per cent participants were of the opinion that the material was not useful.
- More than five per cent participants did not respond.
- Interaction/Panel discussion was found useful by more than 38% participants.

- More than fifty three per cent participants graded it as only useful.

- Some of them (only 1.24%) did not agree with the usefulness of the panel discussion.

- Around seven per cent did not respond at all.

    The receiving ends in general lauded the efforts of the panelists suggesting that it was really a useful attempt

TABLE 6
Opinion about Panel Descussion

Responses	Number of Responses	Percentage
Very useful	93	38.59%
Useful	129	53.53%
Not useful	3	1 24%
No response	16	6 64%

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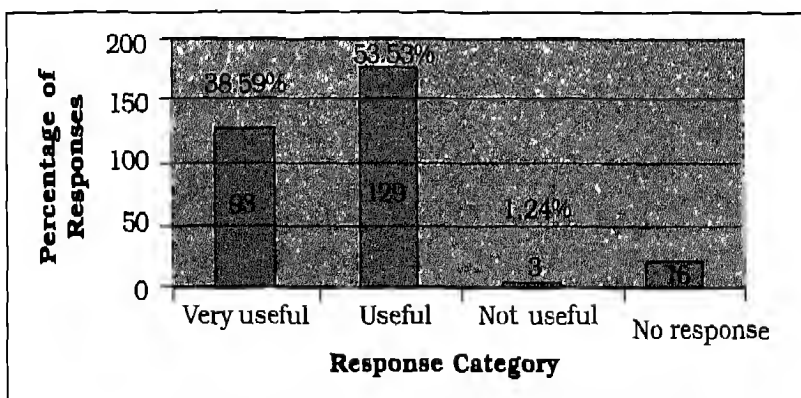
- More than thirty-seven per cent participants responded this as very useful.

- More than half of the participants considered this input as useful

- Nearly seven per cent participants did not respond.

- On analysis it can safely be said that 89% of the participants found question-answer (interaction) as the useful aspect of teleconferencing.

- Eighty-seven per cent participants were satisfied with the speed of presentation.

- About eight per cent participants wanted more benefits, more time They were discontented with the speed of presentation.

- More than five per cent remained neutral.

TABLE 7
Opinion on Question-Answer session

Responses	Number of Responses	Percentage
Very useful	90	37.34%
Useful	127	52 70%
Not useful	6	2.49%
No response	18	7 47%

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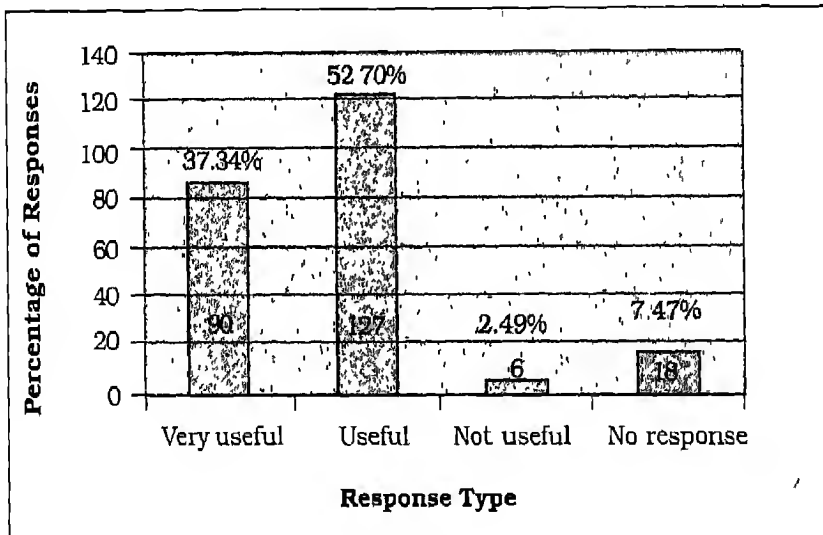
- More than sixty-four per cent were quite satisfied with the allotted time

- More than thirty-one per cent wanted more time.

- More than four per cent did not respond.

- Majority (63.49%) of the participants reported that time allotted to question-answer session was sufficient.

- Nearly five per cent of participants, wanted more time for discussion.

- Only twenty-five per cent felt that it was more than required.

TABLE 8
Opinion on Specificity of Presentation

Responses	Number of Responses	Percentage
Yes	210	87 14%
No	18	7 47%
No response	13	5.39%
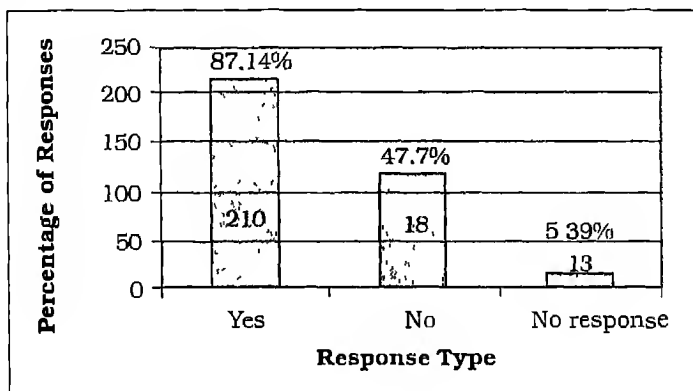
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TABLE 9
Allotted Time

Responses	Number of Responses	Percentage
Sufficient	155	64 32%
Insufficient	76	31 54%
No response	10	4 15%

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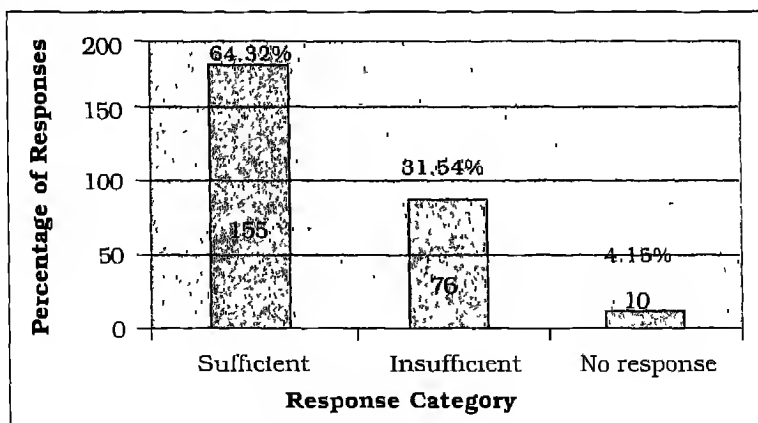
However, it was felt that there is a scope to raise the time of teleconferencing on such issues for widening the scope of teleconferencing.

- Majority of the participants responded in affirmative.

- More than twelve per cent were undecided regarding this issue.

- About three per cent participants did not respond.

As per the agreement to the responses of the participants, there

TABLE 10
Opinion on Question-answer Session

Responses	Number of Responses	Percentage
More than required	11	4 56%
Sufficient	153	63 49%
Too less	62	25 73%
No response	15	6 22%

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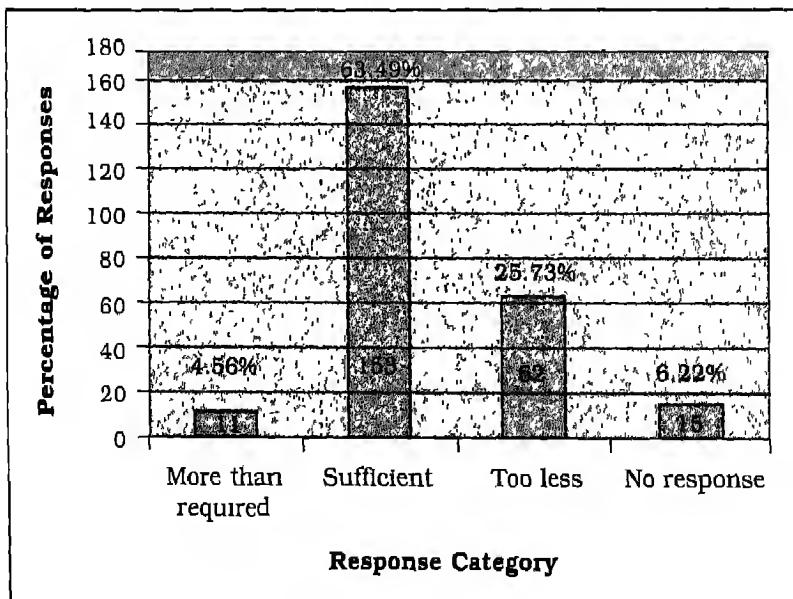
could be no two views on the concept of transaction. Besides being as area of national concern, it was a concept that every person in the area of education will like to interact. The participants also endorsed the view of usefulness of the sharing experiences through teleconferencing.

- More than 89% participants recommended such programmes for better clarity of issues.
- Four per cent participants remained in undecided position
- About two per cent disagreed with this thought.
- About five per cent could not answer

TABLE 11
Usefulness for Appraisal

Responses	Number of Responses	Percentage
Agree	198	82.16%
Undecided	30	12 45%
Disagree	6	2.49%
No response	7	2 90%

N=241
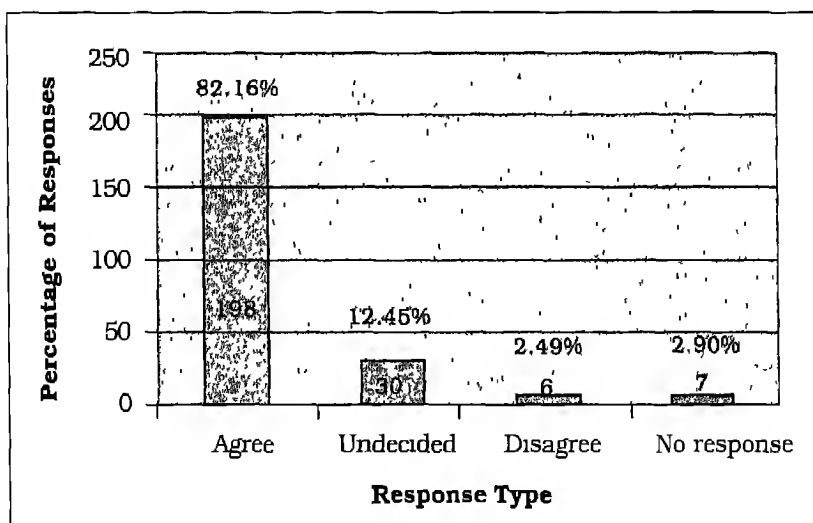
- Majority of participants (95.02%) agreed with this view of interaction helps in sharing of experiences.
- Nearly three per cent participants were undecided.
- Only one participant did not agree with the view

with the help of interaction and teleconferencing breaking the barriers of time, space, geographical conditions, distances, etc.

In such a situation, the essence is that we need to develop skills to create new and innovative uses through such

TABLE 12
Opinion on more Such Programes

Responses	Number of Responses	Percentage
Agree	216	89.63%
Undecided	9	3 37%
Disagree	4	1 66%
No response	12	4 98%

N≈241
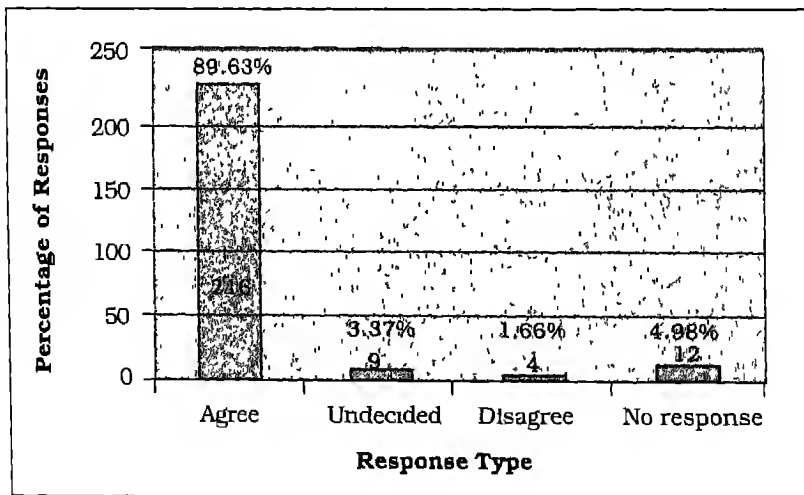
The participants have clearly found that large number of people in different parts of the country or even abroad could share their experiences in a particular area or on a particular theme conferencing techniques and address the problems through teamwork. This may also be used to assist to develop decision-making and problem-solving abilities in order to utilise, diffuse,

TABLE 13
Views on Wider Coverage through Teleconferencing

Responses	Number of Responses	Percentage
Agree	229	95.02%
Undecided	8	3 32%
Disagree	03	1.24%
No response	1	0 41%

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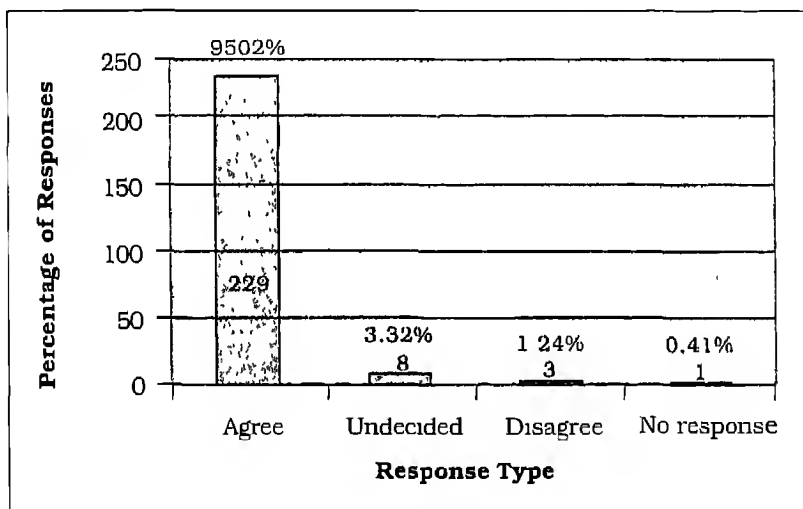
maintain and benefit from the technology we have an access to. In such technology rich societies, the roles, processes will have to be modified to adapt to and reach the products in less time, money, energy with more varied interactions. They may lead to diversification of competencies, interactions and a collaborative efforts could be made. The experiences will open new doors for management in all fields including education, wherein the pressure on transport will be reduced

Teleconferencing could be usefully utilised, apart from collaborative, peer-assisted, resource and problem based learning to experiential, real world learning, on the spot assessment, monitoring and appraisals besides the feedback It may help in on the spot decision-making, communicating and *first-hand clarification* on issues of importance These technology oriented applications are certainly likely to change the scenario of tomorrow and have an influence on our approaches to monitor.

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Adolescents are a Generation Under Pressure

Ranjana Bhatia*

Abstract

Much has been said about the phase of adolescence. This most beautiful period in the life of an individual faces maximum wrath at the hands of an adult — be it the parent or the teacher The best part is that the adults forget that even they went through this phase. If the adults understand the causes of this behaviour pattern, the transition from the childhood to the adulthood would be very smooth. Needless to say that the teachers and the parents play a pivotal role in helping the child pass through this transitory phase

Key Words: Adolescence, Teenage.

"Psychologically, adolescence is the age when the individual becomes integrated into the society of adults, the age when the child no longer feels that he is below the level of his elders but equal, at least in rights... This integration into adult society has many affective aspects, more or less linked with puberty.. It also includes very profound intellectual changes .. These intellectual transformations, typical of the adolescent's thinking, enable him not only to achieve his integration into the social relationship of adults, which is, in fact, the most general characteristic of this period of development"

.... *Jean Piaget*

A Peep into the Past

About fifty years ago, teenagers were a repressed minority in the world of dominant adult values Joint family system prevailed in our society and the master of the house called all the shots. The individual saw either the childhood or the adulthood. The phase of adolescence came and went unnoticed because the transition from the

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childhood to adulthood was straight This transition went unnoticed mainly because of early marriage of the child, which pushed him into adulthood at a very young age The onset of puberty and the related upheavals were there, as these biological changes have to come to every individual but due to the societal circumstances they never surfaced. The biological needs of this adolescence were fulfilled at an early age. Even if these upheavals surfaced, the family atmosphere was such that they never really caused any turbulence. The mind of the adolescent was never free and over exposed to entertain any dilemma or confusion This resulted in minimising the negativity associated with this transition

The Present Scenario

Unlike in the past, today an 18 years old child is regarded as an adult whereas, an 11 years old child is termed to be entering into pre-adolescent phase The gap between the childhood and adulthood is as long as 7-8 years Joint family system is practically missing and the families are becoming more and more nuclear and shifting from smaller cities to metros.

The prolonged phase between childhood and adulthood, which we call the phase of adolescence, has resulted in a generation gap This youth takes pride in being different from adult culture which according to them is narrow as well as orthodox. The youth tries to protest against this adult culture which talks of values. This gap between the adolescent and the adult with the pressures and exposures provided by the society is the root cause of the problem faced by the adolescent.

The Causes of Turbulence

Turbulence in the life of adolescent and societal reaction in this regard happens because.

- During adolescence, these young people undergo revolutionary changes
- They suddenly begin to catch up with adults in physical size & strength.
- There is rapid development of reproductive organs signaling sexual maturity
- They develop a sense of self-awareness, feeling of inadequacy and insecurity
- Physical attractiveness, Vitality, Fun, Love become obvious.
- They ooze with enthusiasm
- Their joy is irrepressible and sadness, inconsolable.
- They are gregarious as well as lonely.
- Self-centeredness is prominent in them
- Their curiosity and boredom is insatiable
- They have both – confidence and self-doubt.
- They use status symbols to establish themselves.
- Maintaining peer group identity is a must for them.

Adolescence – A Period of Transition

What we need to understand is an established fact that adolescence is a period of transition.

Adolescents behave in a peculiar manner because.

- Their status is vague and there is confusion about the roles they are expected to play.
- If they behave like children they are told to act their age.
- If they behave like adults they are accused for being one
- They like to look at life through rose tinted glasses, which the adults do not like
- They have unrealistic aspirations as they feel that they are adults
- They feel angry, hurt and disappointed if let down by adults
- They face heightened emotional tension due to hormonal changes.

How to Handle Adolescents?

Needless to say that this most important phase in the life of a child is the most misunderstood and mishandled period This phase needs utmost care and we need to understand that.

- This is a passing phase Help them pass through this phase with minimum upheaval.
- Exercise lot of patience while dealing with them.
- We may agree or disagree but we must respect their opinion
- Communication can play very important role here
- We must try to make friends with them
- Winning over their confidence is essential
- Infatuation at this age is normal This should be accepted.
- Guide them like a watchful gardener

- Be firm and polite when their demands have to be rejected
- Give them required love and attention.
- Show concern for their anxieties

As Adolescence Changes Socially, What Happens to Parental Power?

- Conflict is more likely to occur between mothers and adolescents because they have been more closely involved with their children during pre-adolescent age.
- During adolescence, sons appear to develop more power over their mothers - they back answer.
- Sons also can become physically stronger and more aggressive with both parents, which decreases parental power.
- Evidence shows that despite the stereo type, a vast majority of adolescents need love and appreciate their parents despite minor conflicts.

Need of Good Relationship between a Teacher and Adolescent

- Teachers have to sets standards and rules to keep their student out of trouble.
- Teachers should protect their student during traumatic experiences but avoid over guidance in coping with normal problems
- The difficulty in helping an adolescent is in finding a balance between permitting adolescents to explore and maintain their independence, while still protecting them and setting limits.

We need to understand that the adolescent development is accompanied by.

- An increase in autonomy.
- An increase in emotional distance from adults
- Increase in peer friendship and its importance.

They actively seek their teachers and parents approval but do not like to sound childish and discuss trivial matters. Because of this, they open up more with their friends discussing issues like dating, personal experiences and common interest

Loyalty is highly valued aspect of friendship for them. They like friends to stick up for one another They have an urge to share their inner most thoughts and feelings with the friends.

Intimate friendship provides them emotional support, information and advice They tend to seek out relationships that are relatively set free, safe and comfortable.

Hypothetical Exemplars

A study was conducted by taking some hypothetical exemplars. The views of 50 teachers working in reputed schools of Delhi and dealing with adolescent were taken on these situations The situations have been listed as case numbers and the reaction of the teacher and probable solutions suggested by them is also given below

Case No 1

You are the class teacher of Class XI. Early in the morning after the assembly, when you go to the class, you are informed discretely by some students that one of *their classmates who boarded the bus in the morning from her bus stop is missing from the class. How will you handle this situation?*

Solutions suggested by the teacher

The teacher gives an action plan for meeting this unusual situation She rightly proposes the following steps as – "sort it out at the teacher's level, inquire from his/her friends, try to find out in the school premises with the help of his/her group, students or friends, consult the bus driver or conductor. If fail, consult the Principal, Vice-principal and if no clue is obtained, finally inform the parents.

She is right in suggesting that the matter should be sorted out at various levels After ascertaining the specific reason, the child should be dealt with tactfully and psychologically by organising sessions with the counsellor for the students as well as the parents. This will help in finding out the reasons for the problems stated above

Case No 2

You are the organiser of a farewell party. The boys and the girls of Class XI and XII want the party to be organised till late in the evening and want the dancing also to be allowed till late in the evening. Your answer would obviously be a big NO. The students are not going to like it and would probably call you Orthodox, Hitler, etc. How do you think this situation can be handled?

The consequences of over staying and allowing late evening dancing parties will be objected at all levels – by the school authorities and by the parents.

Our system does not permit close proximity of youngsters especially late in the evening In order to avoid direct confrontation with the students, it is advisable to go in for group counselling where such issues may be discussed and debated in a frank and open manner highlighting the probable consequences of doing thinks which are not permitted by our society at large

Students' opinion should be obtained and their opinion should be screened to arrive at a consensus. The teacher may indirectly bring in those issues, which can become causes of problems and with the help of the students should avoid controversial situations including over staying after a certain period of time for parties, etc

Case No 3

Class X result has been declared and science stream has suddenly gained popularity. The boys and girls with very poor percentage also want to opt for science stream. The easy way out is to talk of cut off percentage, etc. or allow them to leave the school and join some other school Do you think there is any other way, which can be adopted to handle the situation?

The teacher has rightly suggested that for opting a stream that all the students should be subjected to career counselling sessions On such occasions, the strengths and weakness, the attractions and distractions and other positive and negative aspects associated with the various streams may be brought out in a convincing way Students should be given an opportunity to see the connection of these streams, i e arts, science and commerce, etc with the world of work and self-employment process

The examples of renowned personalities who have excelled in their career as well as life should be narrated as motivators. In these examples the names of those students who have passed out can also be mentioned to counsel the confused/adamant students to get some directions in choosing a particular stream

Case No. 4

There is a strict dress code in your school. The girls are not allowed to wear short skirts and the boys are not allowed to wear jeans and sports shoes, etc Every morning you check the dress, you open the hem of the skirt of the girls to make it long and within one hour the length of the skirt is back to square one No amount of shouting and reprimanding is helping. How will you handle this situation?

The dress code is a technique, which help students to cultivate a sense of self-discipline. For implementing it, the teacher should avoid harsh treatment. In fact, student should be persuaded to understand why dress code is prescribed and how it is helpful to them and to the school system where they study. It should develop in them a sense of belonging, which is very important factor for motivation.

Here again individual and group counselling will help the students to go in for self-appreciation of such codes prescribed through their school system It has been rightly suggested by the teacher that at no cost we should humiliate a child and damage his or her self-esteem

Case No.5

The boys and the girls of Classes XI and XII during their activity period and lab period are not attending the class but are found sitting in the canteen You can stop this practice by constant policing but it does not get corrected. How will you handle it?

There are two ways to enlist student's participation in the class. One is the control method where students attendance become a regulatory factor, the other is the appeal to their psychological tendencies which implies a space for activities which will be interesting, meaningful and useful instrument for understanding themselves and their environment

The activity and the laboratory period must be analysed in terms of the relevance and utility In the lab the student should be provided the challenging situation It should be an exercise where the students would get an opportunity to reconstruct their experience and explore more and more about less and less in order to enrich their knowledge

Case No.6

There is fall in attendance particularly in the Class XII after the Dussehra break You know that most of the course is complete by that time and the school is generally preparing for prelims, etc You feel that the students should be compelled to attend the school regularly At the same time, you also feel that if they are allowed to stay at home they will be able to study more. What do you think should be done in a situation like this?

The fall in attendance after Dussehra break in particular is the result of dwindling motivation and lack of serious teaching In this case, the teacher suggests that children should be motivated to attend classes by giving them assignment on topics which will be captivating and capturing their interest. Besides, as the teacher rightly says, the course topics should be revised seriously in the class

Efforts should be made for activity based teaching which will stimulate interest and raise the activity and participation level of students in a spontaneous manner The adolescent period is a very critical period full of extra energy and drive for getting involved in various tasks of their choice. There should be less of imposition and more of ownership thrust in the plan, activities and programmes of students of class XII level

Case No 7

During Diwali time, there is bursting of crackers in the toilets and in the classrooms. By being strict, this nuisance only increases, but the only alternative is to either allow the nuisance to go on or curb it with a firm hand. You also know that you cannot catch the culprit easily. What do you think should be done?

Children at this age get a kind of thrill by creating nuisance and resorting to mischief The best way to deal with such a situation is a dialogue. The teachers have rightly suggested that a strong communication between the adolescent and the teacher would help in handling the problem The moment

authority is exercised on them, the rebellion in them takes a monstrous shape and they want to do what they have been told not to do They like to break all the rules.

Case No 8

Some boys and girls of the school were caught at cinema theatre in school uniform during school hours advertising the lenient approach adopted by school authorities regarding discipline Expelling such students from the school roll for a short period or forever is one way of dealing with the situation but you know as well as we do that this can ruin the life of a child. How do you think such situation should be handled?

In order to understand the situation fully, it will be helpful to probe into the adolescent psychology. Adolescence is full of creative energy, which requires an outlet and sublimation. Their involvement in watching the movie at cinema hall is an instance of the expression of this impulse, which is present in them

The teacher is of the opinion that excursions under the guidance of the teachers may effectively meet the needs of the students Organising the excursions and outdoor sessions under the guidance of the teacher can satisfy their impulse of outings

Case No 9

A brilliant boy of your school of a senior secondary class is suddenly showing deterioration in performance You as a concerned teacher would be naturally alarmed. You would like to find why this is happening. What will you do?

Deterioration in performance, which may appear to be sudden, may not be actually so sudden as it might appear. However, such cases may be attributed to the lack of motivation and lack of interest A better course for analysing the etiology in this regard is to hold discussions with the peer groups and parents The teacher rightly suggests "talking with parents" and also counselling is the right way of checking such a situation.

The reasons of deterioration in performance can become apparent in counselling sessions There may not be just one reason for this down slide. A number of co-relates of it may be operating which have to be identified and dealt with carefully by personalised programmes and instructions.

Case No. 10

It has been brought to your notice that some boys and girls have indulged in smoking and drinking within the school campus and even outside. Your immediate reaction would be that of anger and anguish. But you know that this is not going to help What is the best way to handle such a situation?

, Here again a very strict discipline at home and in school will not work. It has been rightly pointed out by the teachers that at this age they want to show off and most of the time they indulge in drinking and smoking to impress their peer as well as be a part of their peer group. The teachers and the parents have to act like watchful gardeners and tactfully ensure that their ward is not falling a pray to a wrong company

Case No.11

You have a student in Class XI who has not been performing well in the class academically though he is otherwise quite sharp. He has become a bully in the class & his rowdy behaviour causing concern to all. What is the best way to help such a child?

The bully behaviour is a compensated mechanism on the part of the student The reason for change towards picking disrupted behaviour should be probed a little more carefully and the teacher rightly suggested the casual factor for bulling and roubism on the part of the student should be investigated The students should be given a specific responsibility and a session in counselling will greatly help him in understanding and his situation Such disrupted behaviour is largely due to lack of self-understanding and lack of self-appreciation for which his situations do not permit a congenial atmosphere This can be taken care more effectively by the teachers say that counsel the child, make him understand

Thus to conclude, the teachers have reacted to the various hypothetical case exemplars in a rather realistic manner They have rightly suggested that adolescent psychology should be probed in terms of their creative impulses, pre-occupations, interest and attraction What the adolescent needs is an opportunity and an expression, which will be helpful in intense display of their impulse for which a rationalised forum has to be provided.

In brief, they have to be enabled to become responsibly responsive so that their personality will blossom optimally with a sense of security, adventure and experimentation as a natural gift to them from the seniors with whom they are associated All this requires using counselling sessions both at personal & group levels for which the general principle should be self-involvement, self-regulation, self-guidance rather than imposition from above or outside.

Conclusion

The best way, therefore, to deal with adolescents is to wear the crown of authority in your hearts and not on your heads. This will help the adolescent to pass through the turbulent phase without many ripples We need to understand that this is a passing phase and they have to be helped to pass through this phase with minimum upheaval and lot of patience

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Human Rights Education in Schools
Perspectives and Challenges

Pranati Panda*

Abstract

This article, besides taking stock of the policies and programme of Human Rights Education in Schools, analyses the content, methodology and the role at various actions in imparting Human Rights Education for children in schools The methodology suggested include: (i) Activity-based, conceptually well-integrated with life, (ii) Learner centred, (iii) Inter-disciplinary approach, and (iv) Participation

Key Words' Human Rights, Human Values, Role of Teachers.

Introduction

The post world war has witnessed the predominance of the concerns for promoting universal respect for and observance of human rights and fundamental freedom for all without distinction of any kind. The process of internationalisation and globalisation of the concept of human rights over the last five decades has generated the momentum of *All Human Rights For All* (AHRFA). The promotion and protection of human rights in a plural society like India has its own context and specificity In a complex country like ours, societal violation of human rights, erosion of human values and violation at all levels – local to global, have necessitated the introduction of human rights education at all school levels in general and teacher education in particular. The appreciation of the value of human rights education should go beyond the declarations and recommendations and become a reality and a way of life of school ethos. Therefore, there is a need to address both teachers and students about human rights education and human values in them

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Human Rights and Human Values

The continuing aspiration of an individual to seek an environment where one is treated with equality and justice represents the evolution and history of human rights. Human Rights are those minimal rights, which every individual must have by virtue of his or her being a member of human family. They are based on mankind's demands for a life in which the inherent dignity of the human being receive respect and consideration. Human Rights are the most fundamental of all rights comprised of right to life, liberty—including political, civil, social, economic, cultural, education rights necessary for people to live They are based on humanity's increasing and persistent demands for dignity, respect, justice, protection and freedom for decent human existence Essential elements of human rights are those which should be enjoyed by all, without discrimination, with regard to race, language, religion, birth or status. The essence of human rights lies in legitimising all rights meant for securing statutory safeguards against discrimination and exploitation It encompasses not only the acquisition of these basic rights of the individual but also inculcates these rights which are necessary for the development of an individual as well as world community at large In a broader sense, human rights focus on promoting a world where men can achieve their full human potential by learning to live together in peace and harmony Human rights are universal and they differ in application from culture to culture, from place to place, but the principle behind them is the same

It is relevant for us to discuss and understand very precisely the intricacy involved in the understanding of human rights and human values. Human Rights and Human Values are closely related They are two sides of the same coin as visible and invisible components and cannot be separated A very important principle underlying the concept of human rights is that one person's right is another person's duty Human rights widen the horizon of self-awareness towards the environment and surroundings and are formed by one's own experience of people, events and situations where as values interlink the thought, feeling and actions on a particular belief or issue Value prevents a person from being inhuman in a society. Therefore, human rights and human values are important if any change is to be expected in an individual It is the rights and values of an individual, which determine his behaviour

Education for human rights and human values inculcates in students a spirit of service, nationalism, patriotism, secularism, equality, democracy and scientific temper. It develops among them a sense of commitment to these values Appropriate educational approaches and systematic teaching strategies can inculcate understanding, appreciation and application of human rights and values in children in right perspectives Education in human rights and values directly and indirectly answers basic questions and further leads towards attitudinal change. Research evidence has established that children perform better academically and socially when they have a clear

vision of human rights and human values. These issues have been significantly reflected in the *National Curriculum Framework for School Education*, (2000) which stresses that "a comprehensive programme of Value inculcation must start at the earliest stage of school education as a regular part of school's daily routine The entire educational process has to be such that the boys and girls of this country are able to know 'good', have 'good' and do 'good' and grow into mutually tolerant citizens" Hence, human rights and values must become an integral part of the entire education system to prepare future citizens with a global vision

In this UN decade for Human Rights, it is necessary to disseminate knowledge about rights as well as lay much stress on duty and selfless service. Values of peace, mutual respect and democracy must be imbibed by individuals and groups Humanistic, ethical, moral and cultural values are essential for the promotion of peace and development of respect for human rights. To put these values into educational perspective should be given a high priority. The saying "practice what is preached" creates a challenge to everyone Human rights education serves to remind us of the importance of human values. Our schools have to be the laboratories for development of values and their expression in life.

Human Rights Education

It is universally accepted that education is the best source of social mobility, equality and empowerment both at the individual and collective levels and as

such is imperative for the development of society in a meaningful way The International Commission on Education for Twenty First Century (1996) has reiterated the same line of thinking and made a comprehensive statement that "Education is a basic human right and a universal human value ." In recent times, education for peace and democracy therefore, gets the utmost attention from the planners to create a world of harmony Further, it is considered as a necessary pre-condition for a healthy democratic society. Human rights education has been an integral part of the process of articulation of contemporary concept of human rights and their promotion. The Human Rights Education (HRE) has assumed critical significance as an instrument of awareness of human rights in all the human rights discourses in recent times

Human rights education aims at providing knowledge about human rights This inculcates attitudes of tolerance, respect, solidarity and responsibility It also aims at developing awareness of the ways and means by which human rights can be translated into social and political reality at both national and international levels. It further proclaims life-long inculcation of human rights related values and norms into the total personality of a human being.

In a broader sense education for human rights is described as sensitisation through dissemination of information and other efforts aimed at the building of a universal culture of human rights through the imparting of knowledge, skills and moulding of attitudes Human Rights Education like

the strengthening of respect for human personality and the sense of its dignity; the full development of human personality; the promotion of understanding, tolerance, gender equality and friendship among all nations, indigenous people and groups designated as racial, national, ethnic, religious and linguistic minorities, the empowerment of all persons to participate effectively in a free society; and the furtherance of the activities of the United Nations for the maintenance of peace (United Nations Decade for Human Rights 1995-2005).

Human Rights Education (HRE) is a major instrument for modelling a thinking society. It is a means for envisioning and attaining a peaceful and just society as HRE helps students, teachers, to become better human beings

The goals of Human Rights Education and teaching lie in cultivation and promotion of a living vibrant and humanistic culture, values with a view to create a peaceful society; create harmony amongst all individuals and sections of society; promote human personality and human dignity; promote suitable sustainable development; and foster the positive social and cultural value of diversity

Human Rights: Concept and its Evolution

The contemporary conception of human rights and their universal nature and recognition has historical roots. In order to trace the genesis of human rights we can refer to the philosophers, social and political thinkers through the ages, in different countries of the world, especially Socrates, Plato, Rousseau in the West and Ved Vyasa, Swami Vivekananda, Mahatma Gandhi, Sri Aurobindo and others in India have all enunciated principles of human rights in one form or the other The important milestone in the history of man's struggle for winning rights essential for respectable living was achieved as an outcome of the struggle between British crown and the Parliament, the French Revolution, the American Independence; the Russian Revolution and subsequently the Declaration of Universal Human Rights by United Nations in 1948. The UN Declaration of Human Rights on 10 December 1948 marks the first corner stone of an international movement for human rights a little over three years after the proclamation of UN Charter Subsequently, a specific aspect for children's rights to education, health, protection, living and development was proclaimed in 1959 as "The Declaration of the Rights of the Child". The Universal Declaration of Human Rights (HR) was undoubtedly a milestone in human history embodying a set of guarantees for a person to be able not only to live but to live with dignity, in order to develop fully and use one's human qualities, intelligence, talents and conscience to satisfy one's physical, mental, social and spiritual needs In other words, it asserts one's right to be human The first sentence of the Declaration states that, "Respect for Human Rights is the foundation for freedom, peace and justice in the world". These declarations have generally influenced the constitutions and legal systems of various countries of the world

The importance of education in promoting human rights has been dealt with meaningfully in many documents The Universal Declaration of Human Rights refers to a common standard of achievement for all people and all nations. Its article 26 says, "Everyone has the right to education Education will be free at the elementary and fundamental stages. Elementary education shall be made generally available and higher education shall be equally accessible to all on the basis of merit Education shall be directed to the full development of human personality and to strengthening of respect for human rights and fundamental freedom It shall promote understanding, tolerance and friendship among all nations, racial or religious groups and further the activities for maintenance of peace" Following this, the International covenants on Economic, Social and Cultural rights, were brought out. The International Congress on Human Rights, 1978 followed by UNESCO Convention communicated to governments of various member states to introduce human rights education at all levels. There have been recommendations, in particular, concerning education for international understanding, cooperation, peace, human rights, freedom and so on. The instrumental value of education thus has been given much prominence by the international bodies in promoting respect for human rights.

The Third World Congress on Human Rights, 1990 urges that HRE should be understood as encompassing formal, non-formal and informal education and should aim also to reach parents and policy-makers. It aims at developing the individual awareness of the ways and means by which human rights can be translated into social and political reality at both the national and individual level

The Vienna Conference on Human Rights (1993) once again reiterated the urgency of respecting human rights and fundamental freedom and emphasised that education in human rights must be treated as an essential contribution to the global human rights culture Of the 100 clauses of Programme of Action (POA) of Vienna Declaration, 4 are very much related to education and training which are presented below.

1   The World Conference on Human Rights considers human rights education, training and public information essential for the promotion and achievement of stable and harmonious relations among communities and for fostering mutual understanding, tolerance and peace

2   States should strive to eradicate illiteracy and should direct education towards the full development of the human personality and to the strengthening of respect for human rights and fundamental freedom. The World Conference on Human Rights calls on all states and institutions to include human rights, humanitarian law, democracy and rule of law as subjects in the curricula of all learning institutions in formal and non-formal settings

3   Human Rights Education should include peace, democracy, development and social justice as set forth in international and

regional human rights instruments, in order to achieve common understanding and awareness with a view to strengthening universal commitment to human rights

4   Taking into account the World Plan of Action on Education for Human Rights and Democracy adopted in March 1993 by the International Congress on Education for Human Rights and Democracy of the United Nations Educational Scientific and Cultural Organisation and other human rights instruments, the World Conference on Human Rights recommends that, States develop specific programmes and strategies for ensuring the widest human rights education and the dissemination of public information, taking particular account of the human rights including needs of women

As a sequel to this, the United Nations declared the UN Decade of Human Rights Education 1995-2005. The objectives of the Decade are:

1. The essential needs and the formation of effective strategies for the furtherance of human rights education at all school levels, on vocational training and formal as well non-formal learning.

2   The building and strengthening of programmes and capacities for human rights education at the international, regional, national and local levels.

3   The global dissemination of the Universal Declaration of Human Rights on the maximum possible number of languages and in other forms appropriate for various levels of literacy and for the disabled.

Indian Constitution and Human Rights

The Indian constitutional provisions have translated the concept of human rights into a reality. The Preamble, the Fundamental Rights, the Fundamental Duties and the Directive Principles of State Policy are the concrete steps towards the realisation of human rights Whereas basic objectives have been defined in the Preamble to the Constitution of India, enough emphasis has been laid on the protection of human freedom and liberties on Fundamental Rights (Part – II of the Constitution) and Directive Principles of State Policy (Part – IV of the Constitution). The rights of the child have been foremost priority. Since rights and duties go simultaneously, Fundamental Duties (Article 51A) are also imperative. All these provisions enunciated in the Constitution of India epitomise the collective will and aspiration of all men, women and children of India.

The following provisions exist in the Indian Constitution to safeguard human rights Equality before law (Article-14), Non-discrimination on grounds of religion, race, caste, sex and place of birth (Article-15), Equality of opportunity (Article-16), Freedom of speech, expression, assembly, association, movement, residence, acquisition and disposition of property, practising of any profession, carrying out any occupation, trade or business (Article-19), Prohibition of traffic in human beings and forced labour (Article-23), Prohibition

of labour in case of children below 14 years (Article-24), Freedom of religion (Article-25), No provision for religious instruction in any educational institution wholly maintained out of state funds (Article-28), Conservation of language, script and culture (Article-29(1)), Right of minorities to administer education institutions (Article-30), State guarantee of a social order (Article-38(1) of Directive Principles of State Policy), Adequate means of livelihood, equal pay for equal work for both men and women, non abuse of health of the worker, opportunity to children to develop in a healthy manner and in conditions of freedom and dignity (Article-39 of Directive Principles), Right to work, to education and public assistance in specific cases (Article-41 of Directive Principles), Provisions for free and compulsory education of children up to 14 years of age (Article-45 of Directive Principles) and ensuring education and economic development of Schedule castes, Schedule Tribes and other weaker sections of society (Article-46 of Directive Principles).

Human Rights Education: Policies and Actions

The reports of various Education Commissions and statements of Educational Policy in India (NPE) have articulated the importance of right to education and human rights education as part of the effort for the reform and development of education in India. A special emphasis on education of women, schedule castes, schedule tribes, minorities and handicapped has been laid in the context of education as an instrument to promote equality The

policy statement also defines the basic components of core curriculum, which reflect some of the important human right concerns for all stages of education.

The idea of National Curriculum Framework as envisioned by NPE 1986, ought to include core elements which cut across narrow subject boundaries and were designed to promote values such as India's common cultural heritage, egalitarianism, democracy, secularism, equality of sexes, observance of small family norms and inculcation of scientific temper

The first *National Curriculum Framework* formulated by the National Council of Educational Research and Training in 1975 stated, "The awakening of social consciousness, the development of democratic values and of a feeling for social injustice and national integration are extremely important. All subjects should be taught in such a manner so as to foster the spirit if scientific humanism". The *National Curriculum for Elementary and Secondary Education—A Framework* (NCERT, 1988) identified and addressed some of the concerns like promoting values of egalitarianism, democracy, secularism, equality, removal of social barriers, creating a sense of common citizenship and felt that the school curriculum should reflect some of the issues facing the world and help to make children aware and appreciate the different cultures of nations

Human Rights Education is now being considered a means for everyone everywhere with highly significant and a rich expectation from it. The Third World Congress on Human Rights (1990) urges that HRE should be understood to

reach to parents and policy-makers. Hence, the horizon of Human Rights Education as a holistic concept may include (1) Formal, (2) Non-formal, (3) Informal education to achieve Human Rights Education for All. In 1993 the National Human Rights Commission was set up by an Act of parliament. The commission has taken initiative to generate awareness towards Human Rights Education by integrating it with School Curriculum and Teacher Education Curriculum by active collaboration with NCERT and NCTE. The *National Curriculum Framework for School Education* (2000) has reaffirmed the ten core components identified in the National Policy on Education (1986). It also stresses that, "the fundamental duties as laid down in Article 51A of Part IVA of the Indian Constitution also have to be included in the core components. These core components need to be adopted in a school curriculum in a suitable manner"

Keeping in view the above mentioned scenario, Human Rights Education is not a mere vision but it is going to be a way of life. Hence, education for human rights is essential to prepare all children for better world citizenship. The human rights should be permeated into the whole school life, the ethos and organisation of schools as well as the content of the curriculum

Human Rights Education in Schools: Content and Core Values

The foundation of a society respecting human rights must be laid at the school The school has an important role to play in helping children who will become citizens of the future to develop awareness of world issues in particular and peace and human rights in general. UNESCO Associated School project can be an example of how school can contribute to peace and human rights The school can help in establishing an intellectual basis through teaching about the historical development of human rights and their contemporary significance Human Rights Education is not a matter of merely disseminating information or developing skills It goes deeper than that and is concerned basically with attitudes and value orientation Education for human rights and international understanding must exert its influence from early childhood onwards and through a broad range of disciplines.

The cornerstone of the Human Rights Education is curriculum development for all stages of school education to incorporate more valuable suggestions of Vienna Declaration – human rights, humanitarian law, democracy, peace, cultural and beliefs to provide local colour and relate with life needs of learners at different stages. May be some of these topics already figure in the curriculum, but the present day challenge is to make it the main agenda of learning Human Rights Education is very closely integrated with social studies and value education components of school education

The Formal Curriculum: Within the context of this approach, it is possible for school to integrate the human rights education component into formal curriculum in several and varied ways. (i) Direct context involves inclusion of specific topic or subjects that focus on Human Rights Education (ii) Indirect

context also involves the' use of all subjects in the schools as vehicle for Human Rights Education Schools may choose to examine their present curricula and identify those areas where themes and elements of human rights education already exist. Therefore, HRE is considered as the most important part of the core curriculum of good general education.

The Informal Curriculum· Themes and elements of 'Human Rights Education' programme can also be promoted through various co-curricular activities of the school and be in-built as integral part of it

The Hidden Curriculum· "The hidden curriculum is the unintended shaping of values and behaviours through the psychological processes of reward and punishment and the role modelling or the imitation of significant adults such as teachers and administrators". The Human Rights Education also addresses in self to the far-reaching impact of hidden curriculum of the school

The hidden curriculum is revealed in the 'creation of a school atmosphere' which truly reflects the respect for promotion of human rights in everyday activities of the school. It is associated with the school culture where human rights are deeply rooted in everyday life of the school The need arises to integrate values, attitudes, knowledge and patterns of behaviour into students' personal experiences and to understand reality with a critical view, and also the development of behaviour which should lead towards conscious actions. What does the hidden curriculum in our schools teach about work ethics, standards and accountability? How does

it develop confidence, self-esteem and human values? What kind of models do we provide to the students whose lives we influence? These are the questions which could be answered through core curriculum.

It may be desirable to introduce some of the core rights, social need and problems at the primary stage under the umbrella of value education. At the secondary level a special paper covering core as well as secondary rights may be introduced as per the existing foundation courses for students of all disciplines

Human Rights are themselves an educational conception involving human interaction inside and outside school. Human Rights Education therefore, must include nurturing of such values as democracy, secularism equity, social justice, liberty, security, freedom etc. to ensure a peaceful and dignified life for its citizens Essential learning themes for Human Rights Education could be discussed under the following sub themes.

(i) Dignity (ii) Equality (iii) Justice (iv) Protection of rights (v) Freedom of participation (vi) Freedom of speech and expression (vii) Freedom of religious belief (viii) Cooperation and solidarity (ix) Preservation of culture (x) Internationalism (xi) Protection of the environment (xii) Spirituality.

The above mentioned themes are deemed to be universally acceptable, desirable as outlined in such documents as Universal Declaration of Human Rights, The Convention of the Rights of the Child and Women Rights.

Human Rights Education is interdisciplinary in nature The central area may be outlined as follows. Education for

tolerance, democracy and natural understanding, protection of human rights, violation of human rights and democratic freedom, economic rights, civil rights, critical thinking, scientific temper, intellectual honesty, justice and empathy, legal awareness, equality of educational opportunity, gender equality, political economy and humanism, minority rights, local government and civic rights, constitutionalism and legitimacy, history and philosophy of human rights, world citizenship, role of the UN, human rights and the national and world history, international understanding, environmental pollution, etc

Human Rights Education: Methodology of Teaching

As discussed earlier, human rights teaching should permeate not only in all school subjects but also in each and every aspect of school life How do children acquire values related to human rights? Appropriate methodologies and materials for the teaching of human rights should be developed in conformity with the human rights, principle and standards The methodological issues in the context of human right teaching are relatively more important than the content of human rights which can be integrated into various school subjects

There is no denying the fact that the human rights education both at primary and secondary level need to be taught with great skills and care as it is very difficult to bring alive the concept and provide a feel of these principles. Ideally human rights culture should be built into the whole curriculum The best way to transmit the human rights and values

is through practice, actions rather than precepts and verbal instructions With the aim of sensitising the mind and changing the attitudes of persons and creating a human rights culture, the role of teaching methods remains crucial in the achievement of objectives So far in the existing system of education this has remained a neglected area With the present state of teaching methodology, imparting education related to the Human Rights would become more academic. "It is important to have experiential teaching – bringing in field experiences in the classrooms and taking students to the community"

The methodology should start with children's real experiences in the classroom, at home, in the neighbourhood and in the community. The process as well as experience oriented approach constitute the most appropriate methodology for effective human rights education. It leads to meaningful learning rather than a superficial intellectual understanding The methodology is self-paced and recursive The basic concepts of human rights have to be developed in the young minds through role-play, story-telling, group discussion, etc In addition, teacher attitude and assessment methods are also important in conveying key messages to students Likewise, it is important that the practices adopted in schools and classrooms reflect a climate and culture of Human Rights The whole school ethos needs to be rebuilt on the basic philosophy of human rights to inculcate human rights related values to all children The desirable methods of transacting human rights education must be –

(i)   Activity-based and conceptually well-integrated with the student's lives

(ii) Learner-centred and therefore should
   • emphasise what the learners need to learn rather than what the teachers think the learners need to learn
   • develop critical thinking.
   • enrich the student's imagination

(iii) Interdisciplinary and therefore should help the students
   • know how to use their knowledge of many subjects related to rights and obligations
   • avoid judging situations or solving problems superficially or without understanding there interlink ages.

(iv) Participatory in nature and should
   • require the students to be active, rather than merely listening and reading
   • guide students so that they do not resort to extreme behaviour

The curriculum organisation for Human Rights Education goes beyond the spectrum of subject teaching Organisation of different activities for promotion of Human Rights Education at different stages of school education should be considered as an integral part of the whole process of education Human values can be inculcated in rightful perspective beyond the rigid classroom

The use of activities relating to the theme Human Rights Education can be promoted through cooperation and group living. Some of the activities in which the teacher can involve children at the elementary level are – paper cutting, drawing, work related to science, environmental studies and social studies and any other activity conducive for the development of creativity and aesthetic sensibilities Organisation of exhibitions and debates on human rights issues should be considered as core strategy of Human Rights Education

The dramatic and literary activities have the potential of motivating children to reflect on societal issues and solving them in right perspective Role-playing is an important strategy for inculcating values amongst children. Even the study of major literary and artistic works provides a positive stimulus to children to grasp themes relating to Human Rights, international understanding and peace.

The activities of international relations clubs, art, music or drama circles, UNESCO and United Nations Clubs have immense potential for the promotion of international understanding and Human Rights Activities like wall newspapers, posters on current events, debates, writing essays and poems, celebration of special days like – Human Rights Day, World Health Day, Population Day, Anti Apartheid Day, Literacy Day as part of curricular activities inculcate right human values and generate awareness of human rights. Human Rights Education project can be in-built in the specific subject areas like History, Geography, Civics, Literature and Science

Role of Teachers

It is clear that teachers will have to play important role to play in the organisation of HRE. Can all teachers be able to teach

HRE with same proficiency? What about teachers who even are not aware of their rights and duties in classroom? The simple answer is that teachers are to be given training on content as well as pedagogy, material preparation, curriculum development as they have to be role models in the whole Human Rights Education process. It is now widely accepted that the most effective way to improve the quality and effectiveness of education programme for Human Rights is to reach teachers and teacher educators. They should be equipped with knowledge, skills and understanding to inculcate Human Rights as part of their teacher education courses both pre-service and in-service. Teachers must be provided in-service education to equip them to use appropriate strategies to generate awareness about human rights and to inculcate human values. The teachers can help to transform learner's uncritical attitudes into an active-participative conviction that human rights must be protected, respected and promoted Teachers themselves have to become the embodiments of such values and set an example for their learners. The transaction of Human Rights

Education broadens the role of teachers Unlike classroom instruction, the teaching of human rights does not involve the memorisation of texts or acquisition of skills, it is a matter of creating basic attitudes of tolerance and goodwill towards all human beings.

The value of Human Rights Education should become a reality and a way of life of school ethos Human Rights Education must exert its influence from early childhood onwards and through a broad range of disciplines. It can be incorporated into school curriculum in several ways to inculcate human values Appropriate pedagogy and materials for teaching of human rights should be developed in full confirmation with the human rights principles and standards. The best way to transmit the human rights and values is through practice, actions rather that percepts and verbal instructions Teacher education and teachers being in the most strategic position to impart Human Rights Education need to equip themselves with knowledge and skills to inculcate Human Rights and human values amongst children

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A Study on Scholastic Achievement in Life Science in Relation to Cognitive Style Social Disadvantages and Interest of Secondary Students in Tripura

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Abstract

The cognitive styles, social disadvantages and interest (three independent variables) are important factors for the development of Scholastic Achievement of Life Science The investigator has tried to find out differences, relationships between and predictions of influences of the predictor variables to ward, criterion variable of the Life Science on the performances, of the boys and girls at the madhyamik level of education. 689 students of four districts in Tripura were taken as sample randomly for the study As a result there was no difference in Cognitive style and social disadvantages between boys and girls and positive relationships exist in the variables of Cognitive style, social disadvantages and various items of interest with the scholastic achievement of Life Science The three independent variables jointly predicted (R²) on scholastic achievement of Life Science about 23% of boys and 13% of girls The multiple Coefficient of Correlation (R) Predicts for boys 48% and girls 36%.

Key Words Scholastic Achievement, Cognitive Style

Cognitive style, interest and favourable social situation are integral part of development process in any education system and scholastic achievement of each student Cognitive styles are the characteristics, self consistent modes of functioning which individuals show in their perceptual and intellectual activities It means that the characteristic ways in which an individual goes

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about taking information from the world is referred to as Cognitive style It is a characteristics and systematic procedure within the Psycho-Physical functioning of an individual that helps him to grasp or hold certain signals power from environment and to arrive at a desired end with the help of his innate potentialities, perceptions and his intellectual abilities like knowledge, understanding, comprehension, application, analysis, synthesis etc The Cognitive styles are field independence—dependence reflection—impulsivity styles of Categorisation (breadth Vs Narrowness) styles of Conceptualisation (analytic, categorical, and functional-thematic)

For the present purpose field dependence-independence was considered as a measure of Cognitive style

In fact, different learners have different Cognitive styles through which information are taken in and subsequently processed by them Cognitive styles is seen as an individual's preference and habitual approach to organising and representing information regarding a study or problems, behaviours and their relationship to Cognitive style with reference to both diagnosis and treatment (Riding and Rayner, 1998) For example, some people concentrate closely on a small portion of what is available for input, while others attend to a wider sweep of information

The former strategy has the advantage that one can select a few highly task-related and task-relevant piece of information and focus attention to them This ability when developed makes possible for analytical way of experiencing, called as Field-independent Cognitive style.

On the other hand later strategy involves the risk of Cognitive strain necessitates frequent modification of existing categories and makes intellectual function a more arduous task This sort of Cognitive style non-analytical or global in nature, is known as Field-dependent Cognitive style.

The field dependent is global in nature and it involves the acceptence of the totality of impressions mode of operation The Field-independent Cognitive style of articulated type involves in analysing and structuring incoming information. Field-independent students showed in significantly greater capacity for mastering their own feelings and shortcomings and more dominant personalities, prefer more logical and structured learning.

According to Bruner the mental operations of student are generally five types, (i) Scanning and holding, (ii) Problem-solving, (iii) Remembering, (iv) Generating and Classifying, (v) Ordering and relating Most classroom activities involve one or more of these basic information processing systems So an intimate relationship exists between dimension of Cognitive style and different subjects of scholastic achievement as was found by Mc Kinney (1975), Ault (1972), Drake (1970), Rosch (1985), Berry (1991). Further, more consistent sex differences have been found in Cognitive style dimension Boys and men tend to be more Field-independent than girls and women (Witkin 1955, Kato 1965, Okonji 1969)

In education it is presumed that interest can integrate student's experiences outside school in the learning process, encourage students to use prior knowledge in pursuing new knowledge and motivate them to engage in learning task at hand Interest is defined generally as a positive Psychological state that is based on or emerges from person—activity interaction. Interest is defined as selective tendency of individual based on his preferences, choices, likes and dislikes It depends on his interest whether he accepts the information or not Interest may refer to the motivating force that impels man to attend to a person, a thing or an activity or it may be the effective experience that has been stimulated by the activity itself In other words, interest can be the cause of an activity and the result of participation in the activity Interest is very much linked with human wants, motives, drives, and basic needs It is a great motivating force that persuades an individual to engage in Cognitive connative or affective behaviour. Interest may be conceptualised as personal interest and situational interest. Personal interest is defined as a person's preference for one activity over other Situational interest is an effort to explore its potential for motivating students to learn It is defined as the appealing effect of an activity or learning task on an individual rather than the individual's personal preference for activity (Hidi and Anderson, 1992). It is described as an inter active or relational construct because it follows from a person's relationship with a particular activity (Reeve, 1996) In learning, situational interest results from students recognition of the appealing features associated with a specific learning task (Mitchell, 1993).

The complex system of social learning, social motives, social abilities, skills, habits, knowledge which determine social behaviour, create interest and favourable environment toward development of scholastic achievement Social disadvantage can be defined as a situation where social disadvantaged learners are suffering by poverty, lack of proper educational environment in home, school, society, indifferent attitude of parents towards education, traditional prejudice, inadequate space in home and time for study, lack of appropriate school climate, beside the other existing problems in society, like drug, abuse, child abuse, terrorism, corruption, fatalism, unemployment, organised crime and so on.

Ttriandis (1964), Broota and Ganguli (1975) and Davis found a close relationship between social deprivation and cognitive functioning in lower class children which definitely affect the scholastic achievement of students.

Objectives

The three predictor variables cognitive style, social disadvantages and interest are important factors of scholastic achievement subject of Life Science (Criterion Variable) of each learner. So the main objectives of the study were:

i) To find out gender differences, if any, on all the variables under consideration.

ii) Determination of relationship between the scores of the Boys and

Girls on Cognitive style, social disadvantages, Interest and scholastic achievement of Life Science.

iii) Prediction of Scholastic Achievement of boy and girl students in the subject of Life Science

Hypotheses· Keeping in view of the objectives stated the following hypotheses were proposed for the present study.

H_1 · There is a significant gender difference on each of the variables (Cognitive style, Social disadvantages, Interest, Life Science being under consideration)

H_2: There is a significant relationship between scholastic achievement in the subject of Life Science and Cognitive style, Social disadvantages, Interest of the boys being under consideration.

H_3· There is a significant relationship between scholastic achievement in the subject of Life Science and Cognitive style, Social disadvantages, Interest of the girls being under consideration.

H_4: The Cognitive style, Social disadvantages, measures of Interest of the boys combined together is a predictor of their scholastic achievement in the subject of Life Science taken under consideration

H_5· The Cognitive style, social disadvantages, measures of Interest of the girls combined together is a predictor of their scholastic achievement in the subject of Life Science taken under consideration

Scholastic achievement means the quantity and quality of learning attained in a subject of the study after a period of the instruction It means brightness in academic subjects In this study scholastic achievement means knowledge, understanding and skills of application achieved by the students of Class X in the subject of Life Science after following normal classroom instruction with respect to the prescribed syllabus.

Method

Sample· 689 students (comprise of boys N=358 and girls N=331) of Class X reading under the syllabus of Tripura Board of Secondary Education were selected randomly from different schools of four districts in Tripura.

Variables

The following were the predictor variables for the study

Cognitive style, (CFT)

Social disadvantages (S.Dis)

Different measures of Interest

The criterion variable for the study was scholastic achievement of Life Science

Tools Used

For the purpose of the study the following instruments were used.

Assessment of Cognitive style Kit of References test for cognitive factors by John. W French, Ruth. B Ekstrom, Leighton A Price was used to assess Cognitive style.

S Chatterjee's Non-Languages Preference Record for assessing interest of the sample students was used in this study

A scale for assessing Social Disadvantages of Class X student of different schools in Tripura was

developed by researcher as no such test was readily available to meet the purpose.

Scholastic achievement test of Life Science Marks obtained in the year 2002 by the students at the Madhyamik Examination under Tripura Board of Secondary Education which were collected from the respective schools of four districts in Tripura.

Analysis and Findings

To test the hypotheses:- t-test , product moment correlations, multiple regression. analysis were used for the study

The result shown in Table 1 reveals that boys differed significantly from girls on the variables like Life Science interest on medical matters, interest on technical matters and interest on crafts. It can be inferred that there is no difference between boys and girls in the areas of Cognitive style, Social disadvantages, and different measures of Interest on Fine arts, Literacy, Scientific, Agriculture, Outdoor, Sports, Household activities Boys are more proficient in the subject of Life Science

All variables are not significant Some are partly significant So it is concluded that hypothesis H_1 is partially retained

From the Table 2 it is found that very low positive relationship exists in boys between Cognitive style, Scientific, Medical, Agriculture, Technical, Crafts, Outdoor, Sports, Household and scholastic achievement in the subject of Life Science Very low negative relationship exists between Fine Arts, Literacy and Life Science Moderate positive realtionship exists between Social disadvantages and Life Science.

The result reveals from the table that relationships between Scholastic

TABLE 1
Mean differences between Boys and Girls on All Variables

	Boys (N=358)			Girls (N=331)		Df=689
Variables	M	S D		M	S D	t
Life Science	43 67	17 67		38 74	16 08	3 82**
CFT	102.01	35.74		97 10	45 61	1 56
S.Dis	19.94	8 20		19.25	07.29	1 17
Interest:						
Fine Arts	28.40	18.63		27.63	08 75	0 51
Literacy	29 89	09 19		29.33	09 53	0.78
Scientific	32.67	11 80		31 12	11 07	1.78
Medical	33.97	12 14		32 06	12 02	2.07*
Agriculture	24 28	06 72		24 65	06 83	-0 74
Technical	21 21	12 18		19.43	06 04	2 46*
Crafts	19.73	05.42		218.89	05 53	2 01*
Outdoor	22.81	06 98		23.33	07 46	-0 94
Sports	23 05	08 16		22 72	07 70	0.55
Household	24 47	06 52		24 42	06 69	0 10

**P<.01, *< 05

TABLE 2
**Relationship between the Scores of the Boys and Girls on Social Disadvantages,
cognitive style, Interest and Scholastic Achievement of Life Science**

Variables	Coefficient of Correlations (r)	
	Boys (N = 358)	Girls (N = 331)
CFT	0 057	0.056
S Dis	0.419**	0.221*
Interest:		
Fine Arts	-0 039	0.117*
Literacy	-0.054	0 218**
Scientific	0 049	0.82**
Medical	0 014	0 159**
Agriculture	0 047	0 117*
Technical	0 016	0 070
Crafts	0 132*	0 012
Outdoor	0 095	0.017
Sports	0.0167**	0.072
Household	0 16*	0 185**

**P< 01 and *P <05 for df = 356 (Boys), 329 (Girls) income of boys

achievement of Life Science and Social disadvantages, Interest on Household of boy students is significant. All variables are not significant Some are partially significant So it can be concluded that hypothesis H_2 is partially retained

In case of girls, it is found that very low positive relationship exist in between scholastic achievement of Life Science and Cognitive style, Interest on Fine Arts, Scientific, Medical, Agriculture, Technical, Crafts,

Outdoor, Sports, Household Moderate positive relationship exist in between Life Science and Social disadvantages, Interest on Literacy

The result reveals that relationships between Scholastic Achievement of Life Science and Social Disadvantages, Interest on Fine Arts, Interest on Literacy, Interest on Scientific, Interest on Medical, Interest on Agriculture,

Interest on Household of girl students is significant. All variables are not significant, some are partly significant So it can be concluded that hypothesis H_3 is partially retained.

Now substituting different B Values from the table in equation (1). The regression equation for Prediction of Scholastic Achievement in Life Science (Y) of the Boy Students from the Combinations of all the Predictor variables takes form as given below

$Y = 0.2x_1 - 0.42X_2 - 0 07X_3 - 0.12)_4 + 0.10x_5 + 0.11x_6 + 0 04X_7 + 0 00X_8 + 0.09X_9 - 0 01x_{10} + 0 18x_{11} - 0.02X_{12} + 44 01$

From the table 3, it is clear that the regression procedure resulted in a R^2 of 0.2314, F (12,345), Obtained Value = 8,655, P< 00

It indicates that about 23% of Variance of Scholastic Achievement in Life Science explained jointly by

TABLE 3
**Multiple Regression of Scholastic Achievement in Life Science simultaneously
with all the Predictor Variables for Girls**

Predictor Variable	Beta (B)	t	P
CFT	0.02	0.45	0 65
S. Dis.	-0.42	-8.69	0 00
Interest:			
Fine Arts	-0.07	-1 39	0 17
Literacy	-0.12	-1 98	0.05
Scientific	0.10	1 68	0 09
Medical	0.11	1 77	0 08
Agriculture	0 04	0.71	0 48
Technical	0.00	- 09	0 93
Crafts	0.09	1 66	0.10
Outdoor	-0 01	-0 09	0 93
Sports	0.18	2.51	0 01
Household	-0.02	-0 41	0 68

Multiple R^2=0 2314, F(12,345), Obtained Value=8.655, P< 00
Multiple R=0.4810, P< 01
Intercept=44.0 1384

TABLE 4
**Multiple Regression of Scholastic Achievement in Life Science simultaneously
with all the Predictor Variables for Girls   N- 331**

Predictor Variable	Beta (B)	t	P
CFT	0.08	1.49	0 14
S. Dis	-0 21	-3 94	0 00
Interest:			
Fine Arts	-0.02	-0 32	0.75
Literacy	0 09	1 32	0 19
Scientific	0 12	1.66	0.10
Medical	0.03	0.44	0 66
Agriculture	0.02	0 27	0.79
Technical	0.05	0 76	0.45
Crafts	-0 12	-1 85	0 07
Outdoor	-0 03	-0 39	0 69
Sports	0.04	0.49	0 63
Household	0.17	2.62	0 01

Multiple R^2 = 0.1328, F(12,318), Obtained Value = 4.057 P< 00
Multiple R = 0 3644, P< .01
Intercept = 27.56775

cognitive style, social disadvantages and different measures of interest

Moreover the Multiple Correlation (R) between Scholastic Achievement of Life Science and all the predictor variables was found to be 0.4810 which was significant at .01 level

So Cognitive style, Social disadvantages, measures of Interest of the students combined together is a good predictor of their scholastic achievement in Life Science

Hence the hypothesis H_4 is retained in Life Science.

Now substituting different B Values from the table 3 in equation (1). The regression equation for Prediction of scholastic achievement in Life Science (Y) of the girl students from the combinations of all the predictor variables takes forms as given below

$Y = 0.08x_1 - 0.21x_2 - 0.02X_3 + 0 09x_4 + 0 12x_5 + 0.03X_6, + 0.02X_7 + 0.05X_8 - 0 12x_9 - 0 03x_{10} + 0.04X_{11} + 0 17x_{12} + 27 57$

From the table 4, it is clear that the regression procedure resulted in R^2 of 0 1328. $F (12,318)$, Obtained Value = 4.057, $P < .00$

It indicates that about 13% of Variance of scholastic achievement in Life Science was explained jointly by Social Disadvantages, Cognitive Style and different measures of Interest of the students under consideration.

Moreover, the multiple Correlation(R) between Scholastic Achievement of Life Science and all the predictor variables was found to be 0.3644 which was significant at .01 level

So Cognitive Style, Social Disadvantages and different measures of Interest of the students combined together is predictor of their Scholastic Achievement in Life Science

Hence the hypothesis H_4 is retained in Life Science

Girls showed significant weakness in Life Science in comparison to the boys. Intellectual abilities was not responsible for their low achievement So many other factors were exist behind this They suffered from environment guidance, educational backwardness of family, indifferent attitude towards education by their parents, poverty, engagement in traditional activities or domestic activities instead of study at home, non-availability of girls school within a walking distance, motivation, values, adjustment, etc There is also disparity in attitude, opportunity and other factors between boys and girls. As a result girls are deprived from getting at least as much amenities as are provided to their counterparts

The positive (relationship) association was found in between the two variables like Social Disadvantages and Scholastic Achievement of Life Science. It is necessary to take precautionary measures for removal of Social Disadvantages, which may result in better Scholastic Achievement of Life Science.

The prediction of Scholastic Achievement in Life Science indicates the percentage of the criterion variable R^2 explained jointly by the predictor variables under consideration. In case of boys and girls R^2 were 23% and 13% respectively.

Multiple Co-efficient of correlation (R) predicts to what extent Scholastic Achievement of Life Science (criterion variable) were determined jointly all the predictor variables and to what extent

criterion variable was related with predictor variables like Cognitive style, Social disadvantages and different measures of Interest. In case of boys and girls, R were 48% and 36% respectively.

Conclusion from the about discussion, it can be stated that Cognitive style, Social Disadvantages, different measures of Interest are influential predictor variables towards development of Scholastic Achievement of Life Science.

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Grading: What We can Learn from other Countries

Y Sreekanth[*]

---| **Abstract** |---

The present procedure of recording and reporting the performance of students through marks has many drawbacks. The students' ability is only measured and not evaluated. There is need for change from 101-point scale, which is also a type of grading to a more refined method of grading as it is being used in different countries with shorter scale, letter grades and performance descriptors. This presents the grading procedures followed in other countries and a lesson for India to learn from them

Key Words, Grading, Absolute Grading, Direct Grading

Quality education is essential for the all-round development and progress of an individual. Evaluation is an important ingredient for ascertaining the level of progress that a pupil has made towards the standards set by teacher, school and other external agencies such as boards. The recording and reporting of the students/pupils progress, as part of evaluation process is the most debated issue in the recent times as several attempts are being made for the introduction of grades in addition to/in place of marks. This debate of marks versus grades has also been a serious concern for many, as the marks that are given to the student will have far reaching impact and repercussions not only on the life of student but also on parents, family, friends, teachers and the school in which he/she is studying. There are lots of apprehensions, which need to be addressed through a thorough understanding of the subject. With this objective in mind a study of grading system in 41 countries including India was made for knowing what does the grading system mean in other countries, its prevailing pattern and what lessons we can learn from other countries.

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The Problem with the Present Marking System

It is generally accepted by many that there are many drawbacks in the present marking system of 101-point scale These are for example, absence of both absolute zero and 100, as the zero does not mean nothingness and 100 does not represent for the perfection of achievement in reality This leads to variations in the spread of scores in different subjects and makes it difficult for the comparison of scores from test to test or from subject to subject. The element of subjectivity due to inter and intra-examiner variability, imperfection in tools, sampling of contents, sampling of objectives within the content, arbitrary time limits for answering individual questions, testing situations, etc., make a great impact on the marking system It is also argued that due to the complexity of human nature, it becomes difficult to precisely measure the performance/achievement level of a student on 101-point scale. Hence, the need arises for proposing suitable alternative in the examination system and if it is acceptable to all they could be adopted, This alternative may be in the form of ability bands that represent ranges of scores, and they are also familiar to us as grades.

Though grading may not have all the solutions for the problems that have arisen in the implementation of marking system, it may certainly prove to be a better alternative However, this conviction has not yet gained public and institutional support due to lack of faith or awareness. In the light of this, it was felt necessary to study the procedure of awarding marks/grades in different countries, so as to get a picture of what happening around the world

Meaning of Grades

Grade is an affixed letter indicating a measure of performance on a numerical scale and related to achievement of course objectives and grading is the act of arranging in a graduated series. Marks are also a type of grades, and this can be observed while going through the grading system in different countries In fact, marks if seen from a broader international perspective, are nothing but grades mentioned on a very big 101-point scale. But in India, unlike in many other countries marks are reported, without any mention of performance descriptors By reporting only marks, without the mention of grades, performance is only measured (quantative) and not evaluated (qualitative), as measurement process involves only construction, administration and scoring of tests. While evaluation in addition to all these, is based on value judgements, i e. as to how far the raw scores are meaningful for a specific purpose. Raw scores have very little or no meaning unless they are made specific with letter grades (A, B, C, D), and performance descriptors (Excellent, Good, Fair, Poor).

Hence, grades are qualitative assessments, as each grade has often been described by the level of progress/ achievement made by the student. In grading as it is used in different countries apart from measuring on numerical scale, the letter grades and performance descriptors are also reported which convey the level of

achievement that can be understood by everybody very easily

Why Grades are Necessary

In the context of awarding marks some people even hold the view that as they make some student stressful, especially for the students with poor marks, they should be done away with. However, as research conducted in many Countries on education indicated that grades could let students clearly understand their performance and let them know their advantage and limitation. For example without grades, how could students know what talent they really have? Grades are the indicators of student's ability to master the knowledge.

Moreover, the teacher can clearly master the status of each student study through grades. Everyone has talent but no one has all the talent. By grades the teacher can understand each student's talent. For instance, some students may be good at subjects such as mathematics, physics in which there is greater role of logical thinking, and others may like athletics, such as long jump, high jump, 100 meters race, etc. Using grades, the teacher can provide counselling to different students in a better way

It is only through grades parents can understand how their child performs in the study. For example, when he has poor performance in some courses, parents help him to figure at the reason as to why his performance is poor, and help him/her to go through the problem thoroughly. This way each time one goes through this difficultly, he/she will have more confidence on the study In this

way grades encourage students to lear.i It can help students realise their talents and find out their disadvantages Without grades, how could a student clearly understand himself/herself.

Advantages of Grading

The advantages of grading are that it provides for improved student learning/ facilitates communication between teacher and students and enhances academic quality as explained below

Student Learning: Grading enables the students to judge and revise their own work, and descriptions assist in understanding why they received the score that they did and what they need to do to improve their future performance. When the students are made aware of the grades prior to instruction and assessment, they will know the level of performance expected of them and they get motivated to reach the standards It also promotes students self-assessment of their own learning and performance and this enables them to see the strengths and weakness of their work. Through this students can meaningfully reflect on past feedback to improve their cumulative performance.

Communication between Teacher and Student: It helps students understand the teachers' definition of quality, reduces the subjectivity involved in evaluating qualitative work and allows instructors to provide more detailed feedback to individual students The assessment enables the students to work towards specific goals. It ensures that the students become aware of goals and expectations of their performance.

Academic Quality: It leads to an insight concerning the effectiveness of instruction It identifies benchmarks against which progress will be measured and documented. Teachers will be able to grade according to customised descriptive criteria that reflect the intention of a specific task. It ensures that teachers assess the work of students by the same standards and promotes the effective connection between assessments and course objectives. Finally, it ensures consistency of scores among students

How Important are Grades in Learning

Grades can be awarded effectively both in school-based examinations and public examinations If proper guidelines are devised to assess performance of students then the grading process is more efficient in communicating the student's level of knowledge. While awarding grades it is also necessary that grading should not be over emphasised Good grades encourage students to learn But a student should never forget that the actual goal of learning is not the grades, even the highest ones, but to obtain knowledge It is important to learn to achieve good grades in the school but it is more important to learn how to accept the bad grades. In a letter written by Abraham Lincoln to the Headmaster of a school in which his son was studying, he wrote, "In school, teach him it is far more honorable to fall than to cheat. . . Teach to have faith in his own ideas, even if every one tells him he is wrong"

The meaning of and basis for grades and the procedures used in grading should be explained to the students.

Once it is explained, stressing on grades should be avoided, otherwise it will increase students' anxieties and decrease their motivation to do something for its own sake rather than to obtain an external reward such as grade In awarding grades the teachers should stress to students that they reflect work on a specific task and not the judgement about people.

What can be Assessed through Grades

A variety of grading systems are used in educational evaluation throughout the world. Grading system is used to evaluate a broad range of subjects and activities (including papers, speeches, problem solutions, portfolios, and any other subjective task) Grades specify the performance expected for several levels of quality and the ratings may be for example excellent, good, needs improvement, numerical scores such as 1, 2, 3, 4, 5 Grading system provides for the assessment of subjective tasks in an objective and consistent manner

Findings

In the study conducted on grading practices in 41 countries through the analysis of secondary data, it was observed that most of the countries use absolute grading method in some form or the other However, in USA and Australia both relative and absolute grading methods are used, but with a different terminology, i.e norm-reference grading and percentile method respectively. Only 4 countries out of the 16 developed countries are using the 101-point scale, which means 25% of the countries are following this method

These countries are Canada, Portugal, Denmark and Iceland All these countries are converting the 101-scale into smaller numerical scale and/or using performance descriptors

In developing countries nearly 50 per cent of them are using (13 out of 24 countries) 101-point scale. In these countries also shorter numerical scales and performance descriptors are used. However, they range from simple divisions as they are used in India (Distinction, first class, second class, pass, fail) like Excellent, Good, Pass and Poor in Egypt to very complex and with finer descriptior in Lithuania where in addition to marks, 10 point and 5 point scales and performance descriptors are also used.

Most of the countries follow the same type of grading throughout the Country/ Province Very few countries have decentralised system of examination and grading such as USA, Iceland and Korea In USA schools are fully autonomous in awarding grades. The scholastic aptitude test is a comprehensive test conducted at national level. Performance in this test is crucial for a student to get entry into various institutions. There is no nationally mandated grading system and complete autonomy is given to the school. In Iceland there is no standardised secondary school grading system. In Korea there is no universal grading system Assessment depends on the individual school and may use grades and/on percentage marks. The details of the grading system in different Countries are given in tabular form as under·

Types of Grades used in different countries

Sl. No	Country Grade	Numerical Description	Letter	Achievement
1.	USA	5-point	A-D & F	5 level
2	Canada	101-point	A, B, C +, C, C-F	6 level
3	Australia (Northern Territory)	20-point	A-E	5/6 level
4	Sweden	3-point	MVG, VG, G,IG	4 level
5	Switzerland	10-point	-	5 level
6.	Germany	15-point	A_1-D_3	5 level
7.	France	21-point	-	4 level
8.	Spain	10-point	-	6 level
9	UK (O' level)	6-point	A-D & N	-
10.	Portugal	21-point/101-point	A_1-D_3	-
11.	Denmark	10-point/101-point	-	-
12.	Iceland	6-point/101-point	-	-
13	Japan	3-point	-	3 level
14	New Zealand	9-point/5-point	A-E	-
15	Belgium	20-point	-	-
16	Greece	10-point/20-point	-	5 level

17.	Iran	21-point/101-point	A-D	–
18	Lithuania	5-point/10-point/ 101-point	-	10 level
19.	Peru	21-point/101-point	-	-
20.	Russia	4-point	-	4 level
21.	Poland	6-point	-	6 level
22	Turkey	6-point/101-point	A-F	-
23	Indonesia	10-point	-	7 level
24.	China	101-point	A-D & F	5 level
25	Brazil	11-point	A-D/E,B, C,I,M,S	4-6 level
26	Zambia	9-point	A-E	-
27.	Nigeria	9-point/5-point	A-F	5 level
28	South Korea	101-point	A-E	5 level
29	Thailand	5-point	-	5 level
30	Singapore	101-point/9-point/ 5-point	A_1-F_9/ A-E	5 level
31.	Romania	10-point	-	
32	Yemen	5-point	-	5 level
33	Zimbabwe	5-point/101-point	A-F	6 level/5 level
34	South Africa	101-point	A-F & H	-
35	Egypt	101-point	-	4 level
36	Sri Lanka	101-point	A,B,C,S & F	5 level
37.	Pakistan	101-point/6-point	A-F	6 level
38.	Argentina	10-point/11-point	-	6 level
39	Bangladesh	101-point	-	4 level
40	Malaysia	9-point	A-F	4 level
41.	India	101-point/9-point	A_1-D_2 & E (CBSE)	5 level (Distinction/ First Class/ Second Class/ Pass/Fail

Types of Numerical Scales used by different Countries

SI. No	Countries	Numerical Scale
1	3-point	2 countries
2	4-point	1 country
3	5-point	8 countries
4	6-point	5 countries
5	9-points	5 countries
6	10-point	8 countries
7	11-point	2 countries
8	15-point	1 country
9	20-point	3 countries
10	21-point	4 countries
11	101-point	18 countries

15 countries are using more than one type of numerical scale 18 countries are using 101-point scale. But in many of these countries 101-point scale is converted into shorter scale and performance descriptors are also used. 9 countries are using A-F level letter grades and this is the most widely used

Description on the basis of Achievement

SI No	Description	Countries
1	3 level	1
2	4 level	7
3	5 level	14
4	6 level	8
5	7 level	1
6	10 level	1

Conclusion

From the above facts about grading in different countries, it is evident that there is no one universally acceptable form of grading system. But at the same time there should not be any second thought about implementing a grading system with smaller scale and performance descriptors in India as they are widely accepted throughout the world. The present 101-point marking

system is too big a scale and at the same time it also leads to cut-throat competition among students as their focus is mainly on marks, rather than learning due to the societal pressure on them The idea of learning for the sake of learning, and learning as a joyful activity should replace the present approach of learning for marks. This is only possible through grading system. In pupil evaluation there is a need for paradigm shift from the present rigid examination oriented approach to learner centric, learner friendly process of assessment Recording and reporting procedures of performance of students, an integral parts of evaluation also needs a shift, i e , from marks to grades. In this context it is necessary to note the suggestions made by NCFSE – 2000 in which different scales of grading at various stages of school education are recommended as shown in Table A

Hence, it may be observed that absolute grading is the need of the hour. Every effort should be made by all concerned to bring about this in the system with a view to improve the current procedure of assessment. In due course of time, when a favourable climate is built up and the grading procedure is institutionalised in the system then

TABLE A

Stage	Scholastic	Co-scholastic
Primary Upper Primary Secondary Sr Secondary	3-point Absolute Grading 5-point Absolute Grading 9-point Absolute Grading 9-point Absolute Grading in the first 3 semesters Relative grading in the 4th semester examination conducted by the Board	3-point Direct Grading 5-point Direct Grading 5-point Direct Grading 5-point Direct Grading

relative grading (norm-reference grading or percentile method) which is considered as a still better model can be adopted through which the performance of students across the nation can be compared

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Teacher Effectiveness of Autonomous and Non-autonomous College Teachers in Relation to their Mental Health

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Abstract

This paper, following a descriptive study method, has attempted to find out the effectiveness of autonomous and non-autonomous college teachers in relation to their mental health The study establishes that (i) autonomous college teachers are more effective than non-autonomous college teachers on teacher effectiveness, (ii) the teachers of autonomous colleges have better mental health than their counterparts in non-autonomous colleges. The researcher draws a conclusion that the teachers of autonomous college show better performance than non-autonomous college teachers

Key Words: Teacher Effectiveness, Autonomous Colleges, Mental Health

The higher education system in India is one of the largest systems in the world No matter whether it is due to the very large population of the country or due to the efforts made by the system to provide access to education to all those deserving or it could be mere fulfilling of the constitutional obligation, the fact remains that today we have 273 universities including deemed-to-be universities and 10,000 colleges, 70 lakh students enrolled in these universities and around 3 lakh teachers employed for the task (*Universities Handbook*, 2002). The country's population, its socio economic scenario, its obligations towards its people and in turn their expectations, political structure, manpower, employment status and the educational preparations, resource conditions are only a few factors that have direct or indirect influence in shaping the structure and functions of the present Indian higher education

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institutions According to American Commission on Teacher Education (1974), "The quality of a nation depends upon the quality of its citizens and the quality of its citizens depends upon the quality of their education Further, the quality of their education depends more than any other single factors, upon quality of their teachers" No people can rise above the level of teachers.' Teachers can either make or mar the society. Teachers' personality, behaviour, interests and attitude affect the students' behaviour patterns and thus ultimately shape their personality (NPE, 1986 and POA 1992).

The Concept

The word "autonomy" is used in the learning process, teaching methods, curriculum construction and evaluation. It is said that true learning happens in a non-threatening environment which indicates that the learning environment should be free from barriers both physical and psychological. Autonomy in this context refers to the status conferred on an institute for its unique identity and outstanding contributions. It means that autonomy helps institution to have more freedom in both planning and execution of educational programmes, which are the twin functions of higher education.

The concept of autonomous colleges in India first appeared in the recommendation of Kothari Commission Report in 1964-66 It was felt since long that for the promotion and development of an intellectual climate in the higher education systems and for the pursuit of scholarship and excellence, the teachers must exercise academic

freedom The Education Commission strongly recommended autonomy for the colleges The Committee on the Governance of Universities and Colleges (1969-71) under the chairmanship of Gajendra Gadkar, in its recommendation, stated that provision for autonomous college be made in the universities' Act. Central Advisory Board of Education (1972) deliberated at length on the issue and strongly supported granting autonomy to the colleges.

As an outcome of all these, in October 1973 UGC sent out a circular to all the universities entitled "Autonomous Colleges: Criteria, Guidelines and Pattern of Assistance" recommending that they should set up autonomous colleges. The first set of autonomous college came into existence in 1978-79 in Tamil Nadu as a result of the bold initiatives undertaken by the then Vice-Chancellors of Madras and Madurai Kamraj Universities In the first phase 16 colleges; 12 affiliated to Madras University and 4 affiliated to Madurai Kamaraj University were declared autonomous

Emergence of Autonomous Colleges

With the rapid increase in the number of universities and students, it is essential to diversify the courses and models of higher education and to create new processes and models to suit to the emerging needs It is, therefore, imperative to move away from the existing system of the affiliating university The system deprives good teachers of the opportunity to take initiative for creative, imaginative and more fruitful action. It is, therefore,

absolutely essential to decentralise authority and confer autonomy' – (i) autonomy from the university administration to the university departments; and (ii) autonomy from the universities to colleges If the aims of higher education are to be achieved, the country has to make a headway and keep abreast of the developed and developing countries, the existing bureaucratic and centralised structures of the universities have to be radically changed to create an elastic and dynamic system and to promote innovative initiatives and reforms

All the commissions set up from time to time have agreed and emphasised that the educational system needs to be correlated to social requirement and realities It was probably in this spirit that the Education Commission (1964-66) emphasised academic freedom for the teachers and suggested that autonomy be given to good colleges The National Policy on Education (1986), besides identifying a number of thrust areas and action points, gave priority to the setting up of autonomous colleges. The UGC in 1987 has drawn up guidelines for the setting up of the autonomous colleges and is ready to bear extra expenses that would be incurred by the selected colleges

Teacher Effectiveness: An Overview

It is generally agreed that the 'goodness' of an educational system, to a great extent, is dependent on the quality of teachers. A college may have excellent material resources like, equipments, building, library and other facilities along with a curriculum appropriately adopted to suit the community needs, but if the teachers are misfit or indifferent to their responsibilities, the whole programme is likely to be ineffective and wasted The problem of identification of effective teachers is, therefore, a prime importance for realising desirable educational goals Teacher effectiveness causes change in the overt and covert behaviour of the learner, for learning is nothing but a change in the behaviour of the student suiting the social and cultural expectations and norms of the society of which he is a member A better teacher can manifest this change in the students, the more effective he is.

A good teacher enjoys considerable autonomy while teaching and shapes the life pattern of future generation through academic and personal-social interaction with students. An effective teacher is one who not only impart the entire educational curricula allotted to him in the best and the most efficient manner, but also ensures the best possible academic performance, high degree of moral, good interpersonal relationship with all the staff, active involvement in the decision-making process (whenever is needed) and an optimal development of all round personality in students. His tasks are quite challenging He is a repertoire of skills, knowledge, attitudes, values and abilities which help him effectively to perform his tasks. These are the essential attributes for effective teachers

NIEPA (1990) studied the management of autonomy in the institute of higher learning with regard to restructuring of courses, admission procedures, teaching-learning methods

and evaluation procedures Bajaj (1991) defined autonomy in terms of independence in thought and action It also enjoys a great responsibility in a democratic set-up to act with greater restraint so as to be open to social audit The author, further, argues that autonomous colleges have to offer an entirely new set of values and environment to its students. Their students will have to be offered new opportunities to cope with social changes for which they will have to prepare them because it is only the quality of students coming out of these colleges as finished products that will establish the reputation of the college and help them survive better than the conventional ones Sampath and Sekar (1995) analysed the views of the autonomous college students on the evaluation systems being followed in the colleges. A vast majority of the students want the internal assessment to continue and they want to fix a passing minimum in internal assessment. Gunasekaran (1997) in his study found that (1) The sub samples of autonomous colleges did not differ in the evaluation system. Autonomous colleges under aided management were at a higher level in their evaluation system when compared with autonomous colleges under government management (2) The evaluation system in the autonomous colleges was found to be better than those of the non-autonomous institutions. (3) The autonomous colleges were performing better in the areas of evaluation irrespective of the universities to which they belonged (4) Irrespective of the strength of the students in the colleges, autonomous colleges followed a better evaluation system than those of the non-autonomous colleges (5) The staff strength too did not have any impact on the nature of evaluation system of autonomous colleges while the autonomous colleges in general followed a better evaluation system than those of the non-autonomous colleges Nagarajan (1998) in his study revealed that (1) The conferment of autonomy has brought significant changes in the leadership behaviour of Arts and Science colleges (2) Even in Arts and Science colleges autonomy had resulted in promoting only "Human consideration" aspect of leadership behaviour and not of "initiating structure" Rao, Mathew and Samantaray (1999) studied management of autonomy in colleges through analysis of case studies of autonomous and non-autonomous colleges There is no doubt that autonomy has brought some innovations in teaching-learning process Autonomy is a good experiment. Autonomy is well-managed in Private and Christian management colleges. In case of Government autonomous colleges, the state government interference is still in operation.

Biswas and De (1995) in their study on teacher effectiveness found that male and female teachers differed significantly on teacher effectiveness and the female teachers were comparatively much effective than their counterparts. Indira (1997) in her study observed that (i) there was no significant difference between male and female teachers in their teacher effectiveness (ii) There was significant difference in the teacher effectiveness and achievement orientation of two groups of teachers, i e.

below 35 years and above 35 years of age (iii) Experience had no significant influence on the teacher effectiveness of lecturers. (iv) Subject of teaching was not an influencing factor for teacher effectiveness. (v) Readers were more effective in their teaching than Lecturers and Junior Lecturers It was really a wonder to note that principals were least effective (iv) Lecturers working in Degree Colleges seemed to be more effective than the Lecturers working in Junior Colleges. (vii) Type of the college had nothing to do with the teacher effectiveness of Lecturers. (viii) There was no significant difference between the two groups of Lecturers working under different management's, i e. government, and private regarding teacher effectiveness Pandey and Maikhuri (1999) in their study attempted to explore the attitude of effective and ineffective teachers towards teaching profession. The major findings included (i) There was no significant difference between effective teachers having high or low experience in terms of their attitude towards their profession. (ii) High experienced effective teachers' attitude was positive towards teaching profession than low experienced ineffective teachers. (iii) Age of effective teacher was not a differentiating factor in their attitude towards teaching profession. (iv) Young ineffective teachers had a negative attitude towards teaching than ineffective old teachers.

Role of Mental Health on Teacher Effectiveness

Mental health is the adjustment of individuals to themselves and the world at large with a maximum of effectiveness, satisfactions, cheerfulness and socially

considerate behaviour and the ability of facing and accepting the realities of life Every individual, therefore, should possess good mental health to keep one's life smooth and moving nicely. Unless the teacher's mental health is sound, he cannot teach effectively and the quality of teacher effectiveness will always lack in him. ' Mental health' of the teacher, is the mental status of the teacher. If the mental status is high, the teacher will be successful in his teaching. The student, society and the nation will be then more benefited

Weng (1991) suggested that work overload and fluctuation of workload were rated most stressful In general, perceived level of work stress and percentage of total life stress resulting from work were found to be positively related to mental ill health and job dissatisfaction. Mohanty and Mohapatra (1992) explained that one could develop appropriate coping patterns, which would shape better cognitive appraisals of the occupational environment, reduce job stress and increase positive mental health status of individuals. Kamau and Gupta (1994) reported that male teachers are emotionally over extended, exhausted, internally controlled, more anxiety ridden, callous towards students, more personally accomplished and less capable of coping with ordinary demands or stress of life as compared to their female counterparts Sharma (1995) in his study explained that (i) recent life experiences influenced the mental health of teachers. (ii) stress made the teachers pre-disposed to mental disorders. (iii) male teachers were more inclined towards the mental illness. Panda, Pradhan and Senapaty (1996) in

their study observed that (i) mentally healthy teachers were significantly more satisfied with their job as compared to mentally unhealthy teachers (ii) Mental health and age had significant interaction effect on teachers job satisfaction (iii) There was no significant difference between male and female teachers in their job satisfaction Choudhary (2001) in her study found that (i) mental health showed significant main effect on depersonalisation and personal accomplishment of teachers. (ii) Mental health and socio-economic status showed interactional effect on depersonalisation. (iii) Mental health revealed significant effect on emotional exhaustion

Need and Significance of the Study

In the last decades, substantial numbers of autonomous colleges have come up in India. These institutions are entitled for annual autonomy grant for various developmental activities, whereas the non-autonomous institutions do not have this facility The policy framers and educators are confronted with the question such as "has autonomy improved the performance of students?" In what ways the evaluation systems differ between those two types of institutions?" While sporadic attempts have been made to distinguish autonomous institutions from non-autonomous institutions in terms of quality, no scientific study has been conducted so far in the area of evaluation of role of mental health on teacher effectiveness. Moreover, the autonomous institution has many stakeholders such as the teachers, students, heads of

institution, management personnel, etc. It appears that in autonomous college teachers get more academic freedom in all respects including curriculum framing, flexibility in the academic activities and examination reforms, etc On the other hand, teacher of non-autonomous colleges are burdened with more works, they face interferences from principals and management in their works and so on. This hampers their creative thinking. So, they are unable to do any thing of their own May be, they discard taking interest in their teaching works. The researcher draws probable reasons that because of all these factors the autonomous college teachers show better performance than the non-autonomous college teachers The reasons may be that autonomous college teachers get opportunity for professional advancement and they do work the way they like so, they are always gay and happy. This keeps them in good mental health. This opportunity is not availed by the teachers of non-autonomous college teacher The researcher intends to study the teacher effectiveness of the autonomous and non-autonomous college teachers in relation to their mental health

Objectives

(1) To compare the teacher effectiveness of autonomous college teachers and non-autonomous college teachers

(2) To study the difference in teacher effectiveness of the male teachers of autonomous colleges and male teachers of non-autonomous colleges.

(3)   To study the difference in teacher effectiveness of the female teachers of autonomous colleges and female teachers of non-autonomous colleges

(4)   To compare the mental health of autonomous college teachers and non-autonomous college teachers.

(5)   To find out the difference in teacher effectiveness scores of autonomous college teachers and non-autonomous college teachers in relation to mental health

Methodology

The present investigation used Descriptive Survey Method to study the teacher effectiveness and mental health of autonomous and non-autonomous college teachers.

Sample

The sample consisted of three autonomous colleges and three non-autonomous colleges of the similar stature in Orissa As many as 7 departments and 7 teachers from each department had been taken, at random basis, from each college selected for the study. Thus, from each college 7 × 7 = 49 teachers had been taken. So, the total number of teachers to form the sample came to 49 × 6 = 294. In this way, 294 (49 × 3 + 49 × 3) teachers, out of which 199 were male teachers and 95 were female teachers having five years teaching experience in a particular college had been taken to form the sample of the present study

Besides, for the cross validation of the teacher effectiveness data, the researcher could do ratings by the students of the autonomous and non-autonomous colleges At least 21 students of B A. Final Year (tentative) were taken from each college, at random basis, for the purpose of cross validation

Tools used

For present study, the role of mental health on teacher effectiveness, various tools were used. Those included Teacher Effectiveness Scale by Kumar and Mutha, Mental Health Inventory by Jagdish and Srivastava and Teachers' Rating Scale developed by the researcher himself. The reliability and validity of the said test was found to be maximum. This three test were considered to be the best indicators for the assessment of mental health and teacher effectiveness among autonomous and non-autonomous college teachers.

Statistical Techniques

The statistical techniques of 'Mean', 'Median', 'Standard Deviation', 't-test, and 'F'-test techniques were employed, to see the difference among teachers of autonomous and non-autonomous college in relation to their mental health

Analysis and Interpretation

(1) Comparison of Autonomous and Non-autonomous College Teachers on Teacher Effectiveness. *Significance of Difference between the Mean Scores of Teacher Effectiveness of Autonomous and Non-autonomous College Teachers.* The mean score of the autonomous college teachers on teacher effectiveness was 302 24 and that of the non-autonomous college teachers was 244 48 with S D s 20.99 and 24.67 respectively. The

Significance of Difference Between the Mean Scores of Teacher Effectiveness of Autonomous and Non-autonomous College Teachers

College Teachers	N	Mean	S D	't' ratio
Autonomous (Total)	147	302 24	20 99	
Non-autonomous (Total)	147	244.48	24 67	21 63**
Autonomous (Male)	99	303 84	32.26	
Non-autonomous (Male)	100	244 02	24.77	14 66**
Autonomous (Female)	48	298.94	17 62	
Non-autonomous (Female)	47	245 47	24 35	12 24**

** - value is significant at .01 level

obtained 'f' value was 21,63 and this was found to be significant at 01 level of significance It implied that the two types of colleges differed significantly on their teacher effectiveness, it was suggested that teachers who belonged to the autonomous colleges were found to be higher in their teacher effectiveness.

The mean score of the male teachers of autonomous colleges on teacher effectiveness was 303.84 and that of the male teachers of non-autonomous colleges was 244.02 with S.D.s 32.26 and 24.77 respectively. The obtained 'f' value was 14 66 and this was found to be significant at .01 level of significance. It implied that the two groups of male college teachers differed significantly on teacher effectiveness Since the mean score of the male teachers of autonomous colleges on teacher effectiveness was higher than those of

the male teachers of non-autonomous colleges, it suggested that male teachers who belonged to the autonomous colleges were found to be higher in their teacher effectiveness as compared to those male teachers who belonged to the nonautonomous colleges

The mean score of the female teachers of autonomous colleges on teacher effectiveness was 298 94 and that of the female teachers of non-autonomous colleges was 245.47 with S.D.s 17 62 and 24 35 respectively. The obtained 'f' value was 12.24 and this was found to be significant at .01 level of significance It implied that the two groups of female college teachers differed significantly on teacher effectiveness. Since the mean score of female teachers of autonomous colleges on teacher effectiveness was higher than those of the female teachers of non-autonomous

Significance Difference Between the Mean Scores of Autonomous College Teachers and Non-autonomous College Teachers on their Mental Health

Colleges	N	M	S.D.	't' ratio
Autonomous	147	140 80	7 63	
Non-Autonomous	147	133.24	7 38	8.59 **

** - value is significant at 01 level

colleges, it suggested that female teachers who belonged to the autonomous colleges were found to be higher in their teacher effectiveness as compared to those female teachers who belonged to the non-autonomous colleges

(2) Comparison of Autonomous College Teachers and Non-autonomous College Teachers on their Mental Health The mean score of the autonomous college teachers on Mental Health was 140 80 and that of the non-autonomous college teachers was 133.24 with S.D.s 7.63 and 7 38 respectively. The obtained '1' value was 8 59 and this was found to be significant at 01 level of significance. It implied that the two types of colleges differed significantly on mental health of teachers Since the mean score of autonomous college teachers on mental health was higher than those of the non-autonomous college teachers, it suggested that teachers who belonged

to the autonomous colleges were found to be higher in their mental health as compared to those who belonged to the non-autonomous colleges. Summary of Analysis of Variance on 'Teacher Effectiveness' Scores in Relation to Mental Health of Autonomous and Non-autonomous College Teachers.

The F-ratio depicted significant difference between autonomous college teachers and non-autonomous college teachers on Teacher Effectiveness Thus, autonomous college teachers are more effective than non-autonomous college teachers. Again the F-ratio showed a significant difference between good mental health and poor mental health of Teacher Effectiveness, which indicated a significant difference in Teacher Effectiveness between good mental health and poor mental health teachers It indicates highly effective teachers posses good mental health then that of less effective teachers This can be

Mean — Teacher Effectiveness Scores of Autonomous and Non-autonomous College Teachers in Relation to their Mental Health

Mental Health (B)	Autonomous College (A_1)	Non-autonomous College (A_2)
Good Mental Health	$M_1 = 303\ 05$, $N_1 = 75$	$M3 = 262\ 58$, $N_3 = 69$
Poor Mental Health	$M_2 = 301\ 41$, $N_2 = 72$	$M_4 = 28.37$, $N_4 = 78$

Summary of Analysis of Variance on 'Teacher Effectiveness' Scores in Relation to Mental Health of Autonomous and Non-autonomous College Teachers

Source of Variation	df	S S	M S	F-ratio	Significance Level
1. Type of College (A)	1	245690.48	245690 48	210 29	0.01
2. Mental Health (B)	1	63542 83	63542 83	53 39	01
3 Interaction (A×B)	1	150 58	150 58	.13	n s
4. Within	290	338815 78	1168.33		
Total	293				

attributed to the good psychological as well as socio-economical make up of the teachers both the invigorative organisational climate, in which he enjoys the work

The interaction effect (Type of College and Mental Health) indicates that the difference between the mean Teacher Effectiveness scores of autonomous college teachers and non-autonomous college teachers with good mental health is not significantly different from the difference between the mean 'Teacher Effectiveness' score of autonomous college teachers and non-autonomous college teachers with poor mental health

Major Findings

(1) There exists a significant difference between autonomous college teachers and non-autonomous college teachers on 'teacher effectiveness'. The mean score shows that the autonomous college teachers are more effective than non-autonomous college teachers on 'teacher effectiveness'.

(2) There exists a significant difference between male teachers of autonomous college and male teachers of non-autonomous colleges on 'teachers effectiveness' The mean score reveals that the male teachers of autonomous colleges are more effective than the male teachers of non-autonomous colleges on 'teachers effectiveness

(3) There exists a significant difference between female teachers of autonomous colleges and female teachers of non-autonomous colleges on 'teacher effectiveness The mean score indicates that the female teachers of autonomous

colleges are more effective than the female teachers of non-autonomous colleges on 'teachers effectiveness

(4) There exists a significant difference between autonomous college teachers and non-autonomous college teachers on mental health The mean score depicts that the autonomous college teachers have better mental health than the non-autonomous college teachers

(5) Combined effect of type of college and teachers' mental health did not produce significant effect on Teacher effectiveness.

Based on the findings of 't'-ratio there exists a significant difference between autonomous college teachers and non-autonomous college teachers on 'teacher effectiveness'. It appears that in autonomous college teachers get more academic freedom in all respects including curriculum framing, flexibility in the academic activities and examination reforms, etc. On the other hand, teacher of non-autonomous colleges are burdened with more works, they face interferences from principals and management in their works and so on. This hampers their creative thinking. So, they are unable to do any thing of their own. May be, they discard taking interest in their teaching works. The researcher draws probable reasons that because of all these factors the autonomous college teachers show better performance than the non-autonomous college teachers

So far as findings regarding mental health of autonomous college teachers and non-autonomous college teachers are concerned, study projects a significant difference between

autonomous college teachers and non-autonomous college teachers. It means that autonomous college teachers show better mental health than the non-autonomous college teachers. The reasons may be that autonomous college teachers get opportunity for professional advancement and they do work the way they like so, they are always gay and happy. This keeps them in good mental health. This opportunity is not availed by the teachers of non-autonomous college teachers. This also in a different tone of sentence of the study. This outcome may be attributed to more academic freedom in all respects including framing of curriculum, flexibility in the academic activities, examinations reforms, etc for autonomous college teachers.

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Progress of the Primary and Upper Primary Education in Andhra Pradesh
(1956-1957 to 1999-2000)

D Pulla Rao*

Abstract

Notwithstanding the rapid strides made in the literacy rate over the last decade, Andhra Pradesh State continues to be educationally backward compared to even all-India, not to speak of the educationally advanced States like Kerala There is an all-round realisation of this unenviable fact and this realisation has prompted the government of the state to take several initiatives to promote primary and upper primary education in the recent past. We analysed the trends in student enrolment, teacher recruitment and student-teacher ratios with emphasis on the recent years to examine if the actions of the state government have borne fruit. Our analysis brings to the fore the none too happy fact that the state is still lagging behind in primary education although it is better placed in respect of upper primary education. The study ends on the note that a careful analysis of the data on drop-outs is also needed to arrive at a more balanced view of the impact of the Andhra Pradesh government's initiatives in the promotion of primary education.

Key Words Primary and Upper Primary Education, Progress of Education

Education plays a vital role in the process of development of human resources. Primary education constitutes a very important part of the entire structure of education. It is at this stage, the child starts going to a formal institution and formal education starts. And it is at this stage that the child empowerment starts to build up

Primary education in India and also in the State of Andhra Pradesh has been under the control of a number of

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agencies. It is still under the grip of private agencies, though, the State is increasingly taking the responsibility of providing free and compulsory primary education to all This is not to underplay the fact that Andhra Pradesh is among the educationally backward states in the country

After Independence, the famous article of 45 was incorporated in the Constitution of India. It provides for equal right to every citizen, to enter into educational institutions, besides making education free and compulsory to the children in the age group of 6-14 years It means that the enrolment of children should be universal up to upper primary stage Article 46 has specifically mentioned about the provision of education to scheduled castes, scheduled tribes and other educationally backward class people

The government of Andhra Pradesh has taken up several projects to promote primary and upper primary education in the state These include: Operation Black Board (OBB), Andhra Pradesh Primary Education Project (APPEP), District Primary Education Programme (DPEP), Chaduvula Panduga (CP), *Akshara Sankranti* (AS), *Sarva Shiksha Abhiyan* (SSA), Vidya-Volunteer Scheme, Mid-day Meal Scheme, etc These programmes may have had some impact on enrolment of children, recruitment of teachers, and student-teacher ratios The present study examines if indeed there is an impact. In the process it also analyses the trends in primary and upper primary education in Andhra Pradesh. The emphasis of course is on the recent years.

The population of the State was 7.57 crores as in 2001 It constituted 7 37 per cent of the population of the country. Literates in the State were of the order of 4 04 crores They formed 7 18 per cent of the literates of the country Thus, our share of population was much higher than our share of literates in the country. The relative backwardness of Andhra Pradesh in literacy is also reflected by the lower than the national average literacy rate prevalent in the State as late as in 2001 Even though the State took large strides in the last decade, the literacy rate in the State in 2001 was 61 (all persons) as against 65 for the country Male and female literacy rates in the State were 71 per cent and 51 per cent as against 76 per cent and 54 per cent at the all-India level.

Objectives

The main focus of the study here is on the development of primary and upper primary education in Andhra Pradesh. The specific objectives are:

1.   To examine the present position of primary and upper primary education in Andhra Pradesh

2.   To examine the development of primary and upper primary education in Andhra Pradesh from 1956-1957 to 1999-2000.

3   To examine the number of teachers employed in primary and upper primary schools in the state and the rate of growth of number of teachers during the period.

4.   To estimate the student-teacher ratio

The Data

The secondary data relating to the number of schools, enrolment, corresponding school age population in primary and upper primary schools and the number of teachers working in primary and upper primary schools for the period 1956-1957 to 1999-2000 are obtained from the offices of the Bureau of Economics and Statistics, Hyderabad and the Commissioner and Director of School Education, Hyderabad, Andhra Pradesh. It was however found that there are some discrepancies in the data supplied by different offices particularly with respect to the primary education. Therefore, it is important to throw in some caveats at the very beginning so that the data would be read with caution First, there is a difference between enrolment in primary schools and enrolment at primary stage The former excludes the enrolment in primary sections of the upper primary schools, whereas in the latter, the enrolment includes that of primary sections in the upper primary schools also Therefore, we have taken the latter definition in our analysis of the size and development of primary education, because the data collected and presented by the Directorate relate to primary schools Similar is the case with upper primary schools. The difference is to be kept in mind while interpreting the trends in the growth of primary education in Andhra Pradesh. The data with respect to the number of schools, number of children enrolled, number of teachers employed and student-teacher ratio are presented separately for analytical purpose

Primary Education After 1956

Andhra Pradesh State was formed on 1st November, 1956 with Hyderabad as the State capital In order to integrate the course structure at the primary stage in the entire State of Andhra Pradesh, the Government of Andhra Pradesh introduced the 'common programme' from Class 1 from the year 1959-1960 When the first batch of students of this integrated structure came to Class VI, the government has appointed a High Power Committee in 1964-65 to recommend on the future course of education in the states. It is accidental that the High Power Committee of Andhra Pradesh and the Kothari Commission (1964-66) appointed by Government of India have recommended similar structure of education Therefore, Andhra Pradesh is the first state in the country to adopt the 10+2+3 structure of education throughout the State from the year 1969. The lead taken by the state government in promoting school education has not however helped it in the later years to gain ascendancy in literacy rates

The Size of Primary Education and its Growth

The total number of students enrolled in the system of education in Andhra Pradesh is 1.33 crores (enrolment in pre-primary, primary, upper primary, and high schools attached to Junior Colleges) in the year 1999-2000 This number is more than the total population of some of the European countries like Austria. However, we are not concerned here with the total size of the education system in the State. We

confine ourselves of primary education only as our study deals with the development of primary education in Andhra Pradesh.

The data relating to the number of schools, enrolment and the number of teachers working in primary schools for the period of the study from 1956-1957 to 1999-2000 are employed here in the analysis.

Table-1 provides data on the number of schools and the enrolment in primary schools for selected years between 1956-57 and 1999-2000. It also gives the rate of enrolment to the corresponding age group and the number of children per school There were 29,076 primary schools in the entire State of Andhra Pradesh in 1956-1957 and the number increased to 37,320 by 1965-1966 and to 40,691 in 1981 The number stood at 41,702 in 1984-1985 then gradually increased and reached 55,398 in 1999-2000. The index of growth of the number of schools is not commensurate with the index of growth of school age population.

The total enrolment at primary education in the year 1956-1957 was 24 54 lakhs. This increased to 29 76 lakhs in 1960-61 and it has further increased to 46 76 lakhs in 1977-1978. The enrolment stood at 64.12 lakhs in 1984-1985 and ultimately reached to 91 12 lakhs in 1999-2000 The index of growth in enrolment shows that there is a substantial increase during the period of 1977-1978 to 1999-2000. The growth of enrolment and the achievement in the universalisation of primary education may also be found by expressing enrolment as a proportion of the school age population. Therefore, we have also estimated the proportion and

shown in Table-I. The proportion also indicates how many the school age population left out of schools. It is interesting to find that the State had an enrolment rate of 57.94 per cent in 1956-1957 and the proportion increased to 68.26 per cent in 1960-1961 and to 73.02 per cent in 1977-1978. The achievement in terms of the proportion is found to be more during the period 1981-1982 to 1984-1985 The proportion reached 89 per cent in 1984-1985. However, it subsequently decreased to 79 07 per cent in 1995-1996 It ultimately reached to 86.29 per cent in 1999-2000. But, the figures in Table-1 suggest that the State still has a backlog of about 14 per cent to contend with to attain universalisation of primary education It may be noted that the number of students in each school has increased substantially during the period of the study indicating that the institutions have not increased in response to the increase in enrolment.

Increase in Number of Students per Teacher in Primary Schools

So far, we have examined the size and growth of primary education in the State during the period of more than four decades in the State of Andhra Pradesh. But, they do not really indicate the quality of education One indicator of the quality is the student-teacher ratio So we, as a first step examine the number of teachers employed in the primary schools in the State and the rate of growth of the teachers during the period of the study.

Table-2 shows that there were 77,065 teachers employed in primary schools in 1956-1957 of which 13,759 were women,

and they constituted 17.85 per cent An increase in the proportion of women teachers as the primary stage is desirable because it is they, more than the male teachers, who could deal with the children with greater patience, kindness and give love to them The number of teachers increased to 79,923 in 1965-1966 to 79,026 in 1977-1978. The number came to 1,10,857 in 1990-1991 and then decreased marginally to 1,09,440 in 1995-1996. Ultimately it reached 1,36,853 by the year 1999-2000 The number of women teachers in the year 1999-2000 was 48,068 and they constituted 35 12 per cent of the total teachers

It is interesting to note that the increase in the number of teachers in the State is not commensurate with the increase in the number of students enrolled. This has resulted in the increase in the student-teacher ratio over time except in 1990-1991 and 1999-2000 It shows that the ratio was 32:1 in 1956-1957 and it increased continuously up to 70.1 in 1984-1985. The student-teacher ratio has decreased to 62. 1 in 1990-1991 It then increased in 1995-1996 before reaching 67.1 students per teacher in 1999-2000. Though the student-teacher ratio of 40 students per teacher for aided schools is held as the norm, it has never been possible for the government to achieve this objective The data presented in the Table-2 indicates only the State average, but in most of the schools, the ratio is observed to be more than 100 students per teacher This adversely affects the quality of education at primary level, because the school teacher does not find any motive to teach such a huge number,

let alone paying the much needed individual attention, which is so essential at the primary stage of education.

Growth of Upper Primary Education

From Table-3 it may be observed that there were only 329 upper primary schools in the state in 1956-1957 and this number continuously increased to 9,530 in 1999-2000 The progress of enrolment in upper primary schools as indicated by the proportion of school age population enrolled in the schools has shown a very encouraging trend. The proportion increased from 13 77 per cent in 1956-1957 to 65 08 per cent in 1999-2000. The index of number of schools recorded a much higher increase than that of the index of school age population It is a positive sign and shows the improvement of upper primary education in the State during the study period

Student-teacher Ratio in Upper Primary Schools

As noted earlier, the student-teacher ratio shows the quality of education Here, we examine the growth in the number of teachers employed in the upper primary schools in the State during the period under study The data are presented in Table-4 It is observed that there were 3,883 teachers employed in upper primary schools in 1956-1957, of which 901 were women, constituting 23.20 per cent of the total. The number increased to 16,844 in 1965-1966 and the number continuously increased thereafter also and ultimately it stood at 69,117 in 1999-2000 It is a positive sign

and suggests at improvement in the quality of education in upper primary stage

The number of women teachers reached an all time high in 1999-2000 (29,870) and they constituted 43.22 per cent of the total teachers, indicating that women teaching community has been on the increase all through One should consider this to be a healthy sign

The number of both, male and female teachers in upper primary schools shows an increasing trend over the period of our study. The index of female teachers recorded a much higher increase than that of the male teachers This has to do with the policy of reserving 33 33 per cent of teachers' posts to women

During the period under study, the increase in the number of teachers was around 65,000. As the enrolment in upper primary schools showed an increasing trend, it resulted in a favourable change in student-teacher ratio It is observed that the ratio was 82:1 in 1956-57 and it was decreased continuously to 19·1 in 1973-74 and then it is increased continuously to reach 42 1 in 1995-1996 and then it declined to 38 students per teacher in 1999-2000. This figure is less than the student-teacher ratio of 40 recommended by the Government

Conclusion

It is common knowledge that the State of Andhra Pradesh which came into being in 1956 was for a long time inevitably placed in matters of education in general and primary education in particular It may not be an exaggeration

therefore to say that the economic backwardness of the State has roots in mass illiteracy and ignorance of the people The State remained backward for many years notwithstanding the fact that it was rich in natural resources. The population explosion once witnessed in the state could not have been unrelated to the illiteracy of the people of the State.

The State has now broken away from the path of backwardness of earlier years Demographic transition is taking place — the rate of growth of population got reduced dramatically between 1991-2001. We find a one-to-one relationship between the development of primary and upper primary education and developments in other fronts The massive inputs that have gone into the strengthening of primary education have started bearing fruit. Since 1994 about 1.59 lakh posts of teachers/vidya volunteers have been taken into the primary schools and there is promise of recruiting another 16,000 teachers a little while from now

In the light of the above we examined the effect of the initiatives of the government in the field of primary education More specifically, we examined the trends in primary education in particular since the formation of the State. The focus will be on (1) enrolment of children, (2) size of the teaching staff, and (3) student-teacher ratio at the primary and upper primary stages.

The data employed in the study are collected from the offices of the Bureau of Economics and Statistics, Hyderabad and the Commissioner and Director of School Education, Hyderabad The period of study extends between

1956-1957, the year of the formation of the state and 1999-2000, the latest year for which we had access to data. In as much as the terminal year of our study in 1999-2000, it cannot adequately reflect upon the phenomenal changes that have taken place in the primary educational set up in the recent past. This is a limitation of the study

Our data on the trends in the enrolment of children at the primary level showed that it was not commensurate with the growth of population in the relevant age group, notwithstanding the fact that universalisation of primary education has been the avowed objective of the government.

To reflect upon the quality of education we arrived at student-teacher ratios. Let it be told that the significance of women teachers has been increasing over time and this should contribute positively to the growth and development of children. The student-teacher ratio at the primary level, as it stood in 1999-2000 was 67:1 and this compares highly unfavourably with the accepted norm of 40·1 ratio. What is more, in some schools the student-teacher ratio is in excess of 100.1 The outcome of such a ratio would be that the quality of education suffers.

As regards upper primary education the situation has been relatively better as compared to primary education. Even the student-teacher ratio on an average for the latest year of the survey is 38·1. This no doubt augurs well for upper primary education There is, however, a further need to effect improvements in upper primary education As the child goes into the upper primary set up from the primary set up there will be greater demands on the quality of teachers, of school buildings, of other infrastructure including toilets These need to be strengthened Mere increase in the number of teachers does not satisfy the demands of the pupils. This aspect has to be borne in mind if we want to ensure that the upper primary set up expands fast.

This aspect has to be borne in mind if we want to ensure that the upper primary set up expands fast and along the desired lines. To promote primary and upper primary education the Andhra Pradesh government has taken several initiatives in the recent past These initiatives include implementation of DPEP, APPEP, SSA, Chaduvula Panduga, Maa Badi, Back to School and Akshara Sankranti Apart from these, there is the mid-day meal programme. Many people concur that this programme is a great success The programme has been a great motivator for parents to send their wards to schools But the impact of all these initiatives is not quite reflected in the increase in the enrolment ratio as we have seen here. It may show up in the form of reduced drop-out rates. This is an aspect that has not been considered here It should be a fruitful exercise to relate the recent initiatives of the government of the state to the drop-out rates, in particular, at the primary level.

TABLE-1
Growth of Primary Education in Andhra Pradesh, 1956-57 to 1999-2000

Year	School age population (6-11 years)	Index	Number of schools	Index	Number of children enrolled (6-11 years)	Index	Rate of Enrolment to the corresponding age group (in percentage)	No of children per school
1956-57 (lst Year of Second Plan)	42,35,800	100	29,076	100	24,54,054	100	57.94	84
1960-61 (End of Second Plan)	43,59,800	103	34.040	117	29.76.055	121	68 26	87
1965-66 (End of Third Plan)	49,26,700	116	37,320	128	37,69 174	153	76.51	100
1973-74 (End of Fourth Plan)	62,58,500	148	36.984	127	40.39 989	165	64 55	109
1977-78 (End of Fifth Plan)	64,03,800	152	38 836	133	46,75,907	190	73.02	120
1981-1982	64,30,600	151	40 691	139	54,66,075	223	85 0	134
1984-1985 (End of the 6th plan)	72,04,053	170	41.702	143	64,11.608	261	89.0	153
1989-1990 (End of 7th plan)	78,19,000	184	49 000	168	69,21,470	282	88 52	141
1995-1996 (End of the 8th plan)	96,62,276	190	49,125	169	76,40,402	311	79 07	155
1999-2000	1,05,59,968	249	55,398	190	91,12,061	371	86 29	164

Sources.   1   Commissioner and Director of School Education, Hyderabad, Andhra Pradesh.
             2   Statistical Abstracts of Andhra Pradesh. Hyderabad for various years.

TABLE-2

Number of Teachers Appointed in the Primary Schools of Andhra Pradesh
1956-57 to 1999-2000

Year	Men	Index	Women	Index	Total	Index	Student-teacher Ratio (number of students per teacher)
1956-1957	63,306	100	13,759	100	77,065	100	32
1960-1961	60,524	96	13,362	97	73,886	96	40
1965-1966	63,253	100	16,670	121	79,923	104	47
1973-1974	61,556	97	18,230	132	79,676	103	51
1977-1978	59,279	94	19,747	143	79,026	103	59
1984-1985	67,308	106	24,689	179	91,997	119	70
1990-1991	79,219	125	31,638	229	1,10,857	143	62
1995-1996	74,338	117	35,102	255	1,09,440	142	70
1999-2000	88,785	140	48,068	349	1 36,853	178	67

Sources: 1 Commissioner and Director of School Education, Hyderabad, Andhra Pradesh.
2 Statistical Abstracts of Andhra Pradesh Hyderabad, for various years

TABLE-3

Growth of Upper Primary Education in Andhra Pradesh, 1956-57 to 1999-2000

Year	School Age Population (11-13)	Index	Number of Schools	Index	Number of Children Enrolled (11-13)	Index	Rate of Enrolment to the Corresponding Age Group (in percentage)	Number of Children per school
1956-1957	23,12,600	100	329	100	3,18,534	100	13 77	968
1960-1961	24,21,700	105	1,466	445	4,07,885	128	16 84	278
1965-1966	26,00,700	112	2,578	783	6,50,637	204	25 02	252
1973-1974	22,81,200	99	3,662	1,113	5,93,685	186	26.03	162
1977-1978	25,12,800	109	4,201	1,276	7,47,630	234	29 75	177
1981-1982	23,35,800	101	4,812	1,463	9,55,381	300	40 90	198
1984-1985	29,98,008	130	5,445	1,655	12,05,928	378	40 22	221
1989-1990	33,06,013	143	5,989	1,820	14,79,961	465	44 76	247
1995-1996	36,75,620	159	7,298	2,218	19,98,805	627	54.38	274
1999-2000	40,17,110	174	9,530	2,897	26,14 524	821	65.08	274

Sources 1 Commissioner and Director of School Education, Hyderabad, Andhra Pradesh

2. Statistical Abstracts of Andhra Pradesh, Hyderabad, for various years

TABLE-4

Number of Teachers Appointed in the Upper Primary Schools in Andhra Pradesh, 1956-1957 to 1999-2000

Year	Men	Index	Women	Index	Total	Index	Student-teacher ratio (No. of students per teacher)
1956-1957	2,982	100	901	100	3,883	100	82
1960-1961	4,136	139	1,594	177	5,730	147	71
1965-1966	12,921	433	3,933	436	16,844	434	39
1973-1974	22,760	763	7,961	883	30,721	791	19
1977-1978	24,084	808	9,523	1,057	33,607	865	22
1984-1985	28,270	948	12,326	1,368	40,596	1,045	30
1 990-1991	28,270	948	13,567	1,506	41,837	1,077	35
1995-1996	28,882	968	18,786	2,085	47,668	1,228	42
1999-2000	39,247	1 316	29,870	3,315	69,117	1,780	38

Sources. 1 Commissioner and Director of School Education, Hyderabad, Andhra Pradesh
2 Statistical Abstracts of Andhra Pradesh, Hyderabad, for various years

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Impact of Practising Schools on Quality Teaching Practice of Teacher Trainees

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Abstract

This paper has attempted to explore the impact of the practising schools on the quality of teaching practice of the prospective teachers who, in a way, will carry on whatever has been learnt for a long time. Lack of facilities and lack of spirit and motivation of the school would negatively impart the quality of teaching, concludes the study. The dialogue between the training institution and the school becomes an imperative for keeping the link effectively, argues the author.

Key Words· Teaching Practice, Practising School

Education is given high priority by both individual and the society. The quality of school education depends on the quality of teachers who. no doubt, occupy key position in the school system Teacher quality can be improved only through planned teacher training programmes

Universalisation of elementary education is our immediate goal The contents of primary school textbooks and elememtary school textbooks are to be meaningfully transacted to the children For this suitable methods are to be followed The training curriculum must help the teacher to create a desirable classroom climate to plan a variety of learning activities to produce and use learning materials effectively and to try to identity with the needs and aspirations of students.

The question of the curriculum and programme of Teacher Education has been for quite a long time under the active consideration of those who are interested in the improvement of school education in the country

Practising Schools

Teacher Education Curriculum aims at the preparation of professionally

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competent and committed teachers to enable them to play their role Teacher training Institutes such as DIETs and TTls which prepare teachers for teaching elementary school children have the responsibility of giving teaching practice – suitable and sufficient practice to teacher trainees – in primary and middle schools apart from micro teaching and peer group teaching in the institutes

The practising schools should be around the Teacher Training Institutes at convenient distances so that Teacher Educators can visit the practising schools and assess the achievements- quality of performance of the trainees during the teaching practice sessions.

Whatever be the training offered in the Teacher Training Institutes, all will be theoretical and far removed from real situations. As required by NCTE, a teacher trainee should observe teachers teaching different grades and different subjects for a minimum period of ten days This will develop in them the confidence to teach in the classrooms This is followed by 30 days of practice teaching in the schools where they have already attended for observation classes.

So, it is evident that one aspect that affects the teacher education programmes is the practising schools. These schools serve as links between laboratory conditions and real conditions.

Researchers in this area provide awareness as to how close a training setting approximates the workplace and how transfer of teaching skills can be focused in the student teachers (Teacher trainees).

For quality teaching practices of the trainees, the practising schools are expected to provide certain facilities to them.

(a)   Science lab with essential models, samples and other facilities for conducting demonstration' classes and doing experiments.

Maths Kits and Instruments for measuring and drawing geometrical shapes

Maps (both physical and political) and globes.

(b)   Black boards

All these should be available for them, that also in good condition and in sufficient number.

Assessing Teaching Practice

How teaching learning occurs, who teaches with what learning materials, and in what kind of facilities these occur are usually raised as quality related questions. This indicates that the nature of practice teaching and practical work demands continuous evaluation of the skills and performance of the student teachers display from day-to-day.

A suggestion for supervisors from the Teacher Training Institutes is that they should use an observation schedule to assess the quality of performance of the Teacher Trainees The schedule should have appropriate aspects of teaching. When the Teaching practice session is over, the student teachers (Teacher Trainees) should have attained the ability to teach, improve, prepare and use teaching aids suited for imparting education.

Objectives of the Study

1   To identify the facilities available in the practising schools.

2. To see whether there is any influence of guide teachers on the performance of teacher trainees.

3   To assess the quality of performance (achievement) of the teacher trainees during the practice teaching session.

4   To sec whether there is any impact of facilities available in the practising schools on the quality of performance of the Teacher Trainees.

Sample

128 Teacher trainees of Diploma in Teacher Education (DTE) course from DIET, Theroor Kanya Kumari District, Tamil Nadu and 32 practising schools in the same district selected for teaching practice were taken as sample for this study The Schools were selected at random.

Tool

An observation schedule was evolved by the investigator and modified by the Co-Educators of the DIET, Theroor The schedule consisted of important aspects of teaching, facilities expected in a practising school and general

information about the practising school The Supervisors from the DIET visited the practising schools and assessed the quality of performance of the practising teachers with the help of the observation schedule.

Statistical techniques like Chi-square and percentage were used to analyse the data

Analysis of Data

(1) *To identify the facilities*

To identify the facilities and to see whether the available facilities are sufficient for use by the teacher trainees, there were four items (aspects) in the schedule and scoring was made as given in the following table.

Maximum total score is 12 and minimum score is 4 (Table-I). On the basis of the total score, the schools are classified as providing sufficient, medium or low facilities practice teaching of teacher trainees

Table(2) reveals that only 37 5 % of the selected practising schools provide sufficient facilities for teacher trainees The facility is low or very poor in nearly 50 % of the schools

TABLE 1

Sl. No.	Required Facilities	Facility is		
		Sufficient	Medium	Low
1.	Science Lab	3	2	1
2.	Maths Kit, Instruments	3	2	1
3.	Maps and globes	3	2	1
4	Black board	3	2	1

TABLE 2

Sl No.	Facility	No. of Schools	Percentage of Schools
1.	Sufficient (score 12,11,10)	12	37.5
2	Medium (score 9,8,7)	5	15 6
3	Low (score 6,5,4)	15	46 9

ii) To See the Influence of Guide Teachers

To see the influence of guide teachers on teacher trainee, the observation schedule was used It was found that all guide teachers in the practising schools were interested in guiding the teacher trainees (From item no 6 of observation schedule).

They took the trouble of helping them in their activities related to teaching practice The trainees learnt from them the techniques of keeping the children in the classroom under control and facing different classroom situations with confidence.

iii) To Assess the Quality of Performance

of Teacher Trainees

There were ten aspects in the schedule to assess the quality of performance of the teacher trainees Each item carries 1 mark (point) or the total score for a teacher trainee is 10 points Number of trainees in a school varied from 1 to 5 The average score per trainee is taken into account for analysis.

When the mean score per student teacher is 8, 9 or 10 the level of performance is high, the performance is medium for scores 5, 6 or 7 The performance is not satisfactory (or Low level) if the score is below 5

From the Table-3 it is understood that

TABLE 3

Sl No	Average Performance Level per trainee	No of practising schools	Percentage of schools
1	Satisfactory (high)	10	31 30
2	Medium	8	25 00
3	Unsatisfactory (Low)	14	43 70

the teaching practice of teacher trainees is satisfactory only in 31.3 % of schools. In more than 40 % of schools teaching practice is not satisfactory

iv) To Find the Impact of Facilities in a Practising School on the Quality of Performance of Teacher Trainees

The main objective of the study is to see whether the facilities available in a practising school affects the performance of a teacher trainee during the teaching practice session For this Chi-square test is used Observed frequency of the schools along with the expected frequencies (figures in brackets denote expected frequency) are entered in a table and Chi-square value calculated.

THE NULL HYPOTHESIS FORMED IS The facilities available in a practising school has no impact on the quality of performance of teacher trainees during their teaching practice in that school

Calculated Chi-square value is 15.97 which is significant at 0 05 level as the table value is below 15.97. (The table-value of Chi-square is 9.48 at 0.05 level)

Since the calculated Chi-square value is higher than the table value, the null hypothesis is rejected That is, the facilities in a practising school play an important role in improving the quality of teaching practice of teacher trainees.

Suggestions

1   The facilities in all the schools should be made sufficient for good teaching and learning to take place in the schools.

2.   Since schools with good facilities help the trainees to undergo and complete the teaching practice satisfactorily, care should be taken to select the practising schools before sending the trainees for teaching practice

3   A team of teacher educators from the DIETs/TTIs should visit Primary Schools, Middle Schools, High Schools, Higher Secondary Schools to assess the facilities available and give suggestions and help to improve the facilities in those Schools

TABLE 4
Facility Score

Performance Level	High	Medium	Low	Total No. of Schools
High	8 (3 8)	1 (1.5)	1 (4 7)	10
Medium	2 (3)	3 (1.3)	3 (3 7)	8
Low	2 (5 2)	1 (2.2)	11 (6.6)	14
Total No of Schools	12	5	15	32

4.   The Headmaster and one or two Senior guide teachers from each practising school should be invited to the DIET or TTI concerned Their responsibilities as guide teachers to teacher trainee may be stressed.

5.   A list of practising schools may be sent to District level and Block level Educational Officers so that they can visit the practising schools. During their visit, they will observe the classes handled by the trainees and guide them This will be helpful to motivate the teachers of those schools to guide the student teachers

Conclusion

The practising schools play an important role in teacher education programmes requires that the Teacher Training Institutes should keep in touch with the practising schools. The Teacher Training Institutes should help the Primary, Middle, High, Higher Secondary Schools to develop their resources. Then, the teacher trainees will also be resourceful and turnout to be successful teachers.

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Gender Differences and Mathematical Abilities

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Abstract

A society cannot progress materialistically or spiritually unless its women are educated and enlightened even if its men may be highly educated. If we refer the post-Independence situation in education from the point of view of what has been achieved for education of women, we find that the record is impressive but uneven The gap between the level of literacy among men and women is a glaring evidence Also the number of women pursuing research in mathematics and the female mathematicians are not significant in comparison with their counterparts. Mathematics plays a critical role in Science and Technology, aesthetics and has occupied a unique position in development of a society. Mathematics foundation skills are critical for success in today's high performance work place.

Researches in other countries indicated that males consistently outperform females in the solving of mathematical word problems and in geometry. Also they indicated that male co-opt the spatial systems in problem-solving situations more readily than females. However there are no systematic studies to reveal the sex differences in mathematical abilities in the Indian situation. Therefore, an attempt has been made to study in the Indian context to explore the possible areas of gender differences in mathematical abilities with respect to the following abilities (i) arithmetical ability; (ii) abstract thinking; (iii) logical thinking; (iv) symbolising concepts; (v) precision, (vi) discovery approach, (vii) mathematical modelling; (viii) application skills; (ix) generalisation skills; and (x) attitudes The main findings were as given below:

1. *Boys were good in abstract thinking and symbolising concepts in mathematics whereas girls were good in logical thinking and mathematical modelling.*
2. *Both males and females have the same perception of mathematics.*

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3   *Males and females have the same level of liking mathematics*

4. *Males and females gave the same reasons for their liking and disliking of the individual branches of mathematics like arithmetic, algebra, and geometry*

5   *Males stated that 'social factors do not favour girls to go for higher studies in mathematics' as the main reason for not to have top level women mathematicians But females stated that 'vocational interests of women are different' as the main reason*

Key Words: Gender, differences, Mathematical Abilities, Gender bias

It is an indisputable fact that women's education plays a pivotal role in the reformation and progress of a society A society cannot be enlightened nor can it progress materialistically or spiritually unless its women are educated and enlightened even if its men may be highly educated At the end of five decades of planned efforts to gear education towards development and to bring about equality of opportunity in and through education in India, we find the achievement of both objectives has been impressive in parts, but nevertheless inadequate and uneven.

If we review the post-Independence situation in education from the point of view of what has been achieved for the education of women, we find that the record is impressive but uneven The rate of increase in the enrolment of girls at school level has been high. At the same time, gender inequality in education remains highly pronounced: the gap between the level of literacy among men and women is the simplest evidence. Another indicator of gender inequality is the relatively poorer enrolment of girls in professional courses at the university level Research reveals that several factors are responsible for

these inequalities, They range from parental reluctance to send their daughters over long distances to school and parental unwillingness to spend on the education of their daughters. Daughters are being engaged in housework to take care of younger siblings, utilisation of their services in fetching water or collecting fuel and fodder (especially in rural areas). To overcome these obstacles several measures have been set into operation by Government of India For instance, cost free education, stipends, provision of women teachers, facilities for schooling of girls distance education programme, etc

Mathematics is a Necessary Subject

The Indian Education Commission known as the Kothari Commission (1964-66) has pointed out:

"We cannot overstress the importance of mathematics in relation to science, education and research. This has always been so, but at no time has the significance of mathematics been greater than today it is important that deliberate effort is made to place India on the 'World map of mathematics' within the next two decades or so" .

The value of mathematics as one of Russel's "great things" something necessary for life as "art" and not just fact The value of mathematics as Polking Home's "abstract key which turns the lock of physical universe"

Mathematics has played a decisive role in building-up our civilisation and therefore, it has become essential for the existence and progress of modern world. In,today's world we have to be exact in our expression and so we make larger use of quantitative methods Mathematics has not only been useful in its own right but it has also enriched this world by helping in development of other fields of knowledge

Mathematics exhibits the power to think consistently and logically. It helps in our quest for knowledge, truth and beauty, desire to interpret and control our environment Our culture is on the move through mathematisation Consequently, women are increasingly interested in mathematics. Yet the number of women pursuing research in mathematics and the female mathematicians are not significant in comparison with their counterparts.

Significant research was done by Eccles [3], Wise [12], Stanley [11] and many others regarding the gender disparity The focus of research was on (a) attitudes such as the perception of mathematics as a male domain, (b) support and encouragement from significant other factors, and (c) access to role models.

Mathematics foundation skills are critical for success in today's high performance workplace Developing mathematics-learning skills is an essential tool to help mathematics anxious young people build those skills.

Many researchers like Royer, Geary [5, 6] have attempted to study the nature and the source of the sex difference in mathematics abilities. Geary [6] reviewed the research on sex differences in mathematical abilities and pointed out the following·

(i)   The sex difference in mathematical abilities is largely due to a sex difference, favouring boys and men, especially in the speed of arithmetic-fact retrieval

(ii) Individual differences in skill at solving multistep arithmetical word problems were related to individual differences in working memory capacity and to the speed of arithmetic-fact retrieval and carrying out arithmetic operations.

(iii) It is, not clear how the automaticity of arithmetical processes would improve performance in mathematical terms that do not require arithmetic

(iv) The magnitude of the sex difference in mathematical abilities varies with the mathematical content of the tests and with the age and overall ability of the individuals assessed. The advantage of being male is most evident in high-ability samples and for the solving of word problems and items that require complex spatial competencies

(v)   The social sex differences might contribute to the sex difference in mathematics achievement.

(vi) The cognitive sex differences are related to mathematical ability, specifically mathematics-fact retrieval and spatial cognition.

(vii) The relations among biological factors (e.g. sex hormones), experience, and sex differences in brain, cognition, and social behaviour are very complex.

(viii) It is observed in some species that the brains of females and males sometimes respond (e g. in terms of growth of dendrites) differently to the same experience, apparently through the action of sex hormones

(ix) The sex differences in mathematical abilities is likely to be experience-based and that any such sex difference in much related experiences does not have a biological basis in performance. In other words, it cannot be assumed that the different experiences of boys and girls and men and women are driven only by cultural factors (e.g. gender roles) and even with the same experiences it cannot be assumed that cognitive and brain developments of boys and girls will be the same

(x) The sex difference in vocational interests is especially striking among mathematically-gifted youths. When they are in their 20s, for every mathematically gifted women who is working towards or who aspires to earn an advanced degree in mathematics, engineering, or the physical sciences, there are eight equally talented men

(xi) For the gifted individuals, the sex difference in the pursuit of an advanced education in mathematics-intensive areas cannot simply be attributed to cognitive factors

(xii) People who enter mathematics-intensive fields tend to have a low need for people contact.

(xiii) Mathematically gifted men, who enter the fields like theoretical and investigative activities, do indeed show the same pattern of occupational and social interests. Mathematically gifted women, in contrast, "are more socially and esthetically oriented and have interests that are more evenly divided among investigative, social, and artistic pursuits"? In short, many mathematically gifted women may not choose to enter math-intensive fields because they have broader social. and occupational interests than their equally gifted male peers and therefore, more frequently pursue occupations outside of these math-intensive areas.

(xiv) It appears that gifted women are more interested in careers that involve living things (e.g biology and medicine) as opposed to inorganic things (e.g. physics and engineering)

(xv) Sexual and natural selections are also potentially related to the cognitive sex differences that contribute to the sex difference in mathematical abilities.

(xvi) It is not clear how a male advantage in speed of math-fact retrieval could contribute to the sex difference, favouring boys and men, on mathematical tasks that do not require arithmetic (e.g. visualising geometric shapes)

(xvii) Sexual selection can, however, indirectly influence sex differences in mathematical abilities, to the extent that the cognitive and brain systems that support mathematical cognition have been shaped by evolution

(xviii) The cognitive and brain systems that have evolved to enable movement in and the representation of three-dimensional space are more highly elaborated in boys and men than in girls and women

(xix) The effect of the sex difference in navigational competencies is that boys and men have an advantage in mathematical areas that require an understanding of geometry and involve the use of spatial representations of mathematical information, including the use of spatial representations to solve complex word problems.

Elizabeth Fennema and Sherman [10] observed that males were more confident about learning mathematics than were females. Also differences between males and females in spatial skills, particularly spatial visualisation or the ability to visualise movements of geometric figures in one's mind, have long been reported

Gordon Stobart [7] and others also observed better results for girls in subjects other than mathematics and some sciences.

In the Indian context, we have no evidence to prove the validity of the observations Very few researchers attempted to compare merely the achievement (in mathematics) of boys and girls at different stages. To mention these, Rastogi [9] observed that there was no sex difference in mathematics achievement. Baseline studies indicate that the achievement of boys was comparatively higher than that of girls. Kartik Chandra Mandal [8] observed that to some extent girls in Class VIII were better than the boys in respect of creativity in mathematics. Also he observed that boys in general were better than girls regarding fluency, flexibility, originality or creativity aspects of mathematics. Basavayya [1] pointed out that the perception of mathematics among boys was better than that of the girls

Of course there were a few studies about the measurement of gender differences related to general abilities. However in all, there were no systematic studies worth mentioning to reveal the sex differences in mathematical abilities in the Indian situation. Therefore, one has to pursue a systematic detailed study in the Indian context to explore the possible areas of sex differences in mathematical abilities with respect to speed, problem-solving, creativity, cognitive, affective and psychomotor domains, biological factors – chemistry of brain, physical weakness, hormones, etc. curriculum bias, attitudes, language, etc. with the following questions in mind.

Are males and females fundamentally different with respect to learning?

Are males and females fundamentally the same, with the exception of their biological differences, and are these differences irrelevant with respect to mathematics?

Here an attempt has been made to conduct a study covering the following

mathematical abilities: (i) arithmetical ability, (ii) abstract thinking, (iii) logical thinking, (iv) symbolising concepts, (v) precision (vi) discovery approach, (vii) mathematical modelling, (viii) application skills, and (ix) generalisation skills along with the attitude towards mathematics

Objectives

(i) To identify the areas in which sex difference exists regarding the mathematical ability.

(ii) To find out the extent of these differences that affect the overall development of the careers of the individuals.

(iii) To suggest the educators and parents the way to reduce the gender gap, if any

Methodology

Two types of tools have been developed – one to measure the mathematical abilities and the other to identify the factors responsible for gender differences in mathematics In the first category specially prepared tests were used to measure the mathematical abilities of boys and girls. In the second category three types of opinionnaires were prepared and administered to the selected number of students and mathematics teachers/teacher educators. The opinionnaires were mainly in the form of checklists and with few open-ended questions. Some interviews were also conducted. The selection of students and teachers was done using stratified random sampling procedure.

Analysis

Language and Mathematics are two inevitable basic academic components of any school curriculum. Language comes to a child naturally while it is not the same for mathematics. Acquiring of mathematical knowledge requires deliberate efforts by students involving special attributes and capabilities from their part Learner may have to develop certain attributes and capabilities to have sound knowledge of mathematics through study and training. Here an attempt has been attributed

Since arithmetic is the subject on which the whole of mathematics rests, learning of mathematics starts with numbers and basic arithmetic operations. Therefore, it is essential for a student to develop arithmetical ability that enables him or her to compute and deal with numbers effectively. Mathematics by its very nature is an abstract subject. In the beginning although students are taught mathematics through concrete objects, after certain stage there is bound to be a shift from concrete level of thinking to abstract level Hence, thinking at an abstract level forms another capability that a learner of mathematics should possess.

The hallmark of mathematics lies in its two valued logic, viz. true or false. That is where the precision or uncompromising nature of mathematics is revealed. In fact, it is this precision of mathematics that makes it difficult for the learners The most challenging area of mathematics is the problem-solving or so-called mathematical modelling as this technique quite often is inter-disciplinary in nature.

Keeping the above facts of mathematics in our mind, some of the capabilities the learner of mathematics may have to possess were listed below and enumerated

(i) *Arithmetical Ability.* Earlier studies reveal that girls were comparatively better regarding this ability as can be seen from Table 1, although statistically insignificant The arithmetic ability of girls appeared better except in Class VIII and Class XI Generally boys were more concerned to score high marks in Classes XI and XII to get admission into technical courses This could be one of the reasons for the better performance of boys in arithmetical skills at XIth and XIIth Classes.

(ii) *Abstract Thinking:* In general boys were good in abstract thinking except in Class IX when there was a temporary decline in comparison to girls. It is because girls would be more matured than boys when they reach in Class IX

(iii) *Logical Thinking:* Unlike abstract thinking, girls were good in logical thinking at all levels except in Class VIII

(iv) *Symbolising Concepts:* Table 1 indicated that in Class VII and VIII boys were better than girls in symbolising the mathematical concepts.

(v) *Precision:* This ability was measured from Class VII onwards It was observed from Table 1 that there was no difference between boys and girls at school level although girls were better at college level. This might be due to the better standard

of female students at the time of admissions to the B Sc Ed course

(vi) *Discovery Approach* General opinion was that boys prefer discovery approach of learning But it was observed that there was no difference between boys and girls regarding this concept except in Class V This might be due to their experimental nature of mind at that stage.

(vii) *Mathematical Modelling* It was thought of measuring this ability from Class VIII onwards as the students of this age try to solve problems in different fields by expressing them in mathematical terms. Female students have some superiority in mathematical modelling at higher level (college level) even though there was no significant difference at lower levels

(viii) *Application Skills* The application and use of mathematics will be noticed only when students use mathematical knowledge to solve problems in different disciplines and situations. It was observed that the male and female students have the same mathematical application skills.

(ix) *Generalisation Skills·* Generalisation of known mathematical knowledge/ concepts in wider situations is important for mathematical learning In this study it was observed that boys and girls did not differ much in genererealisation skill.

(x) *Attitudes Towards Mathematics.* One can learn different concepts when they are having positive attitude towards that. This is particularly

very much true in case of mathematics-learning. Therefore, in this study it was attempted to measure the attitudes of males and females towards mathematics at different levels. Information regarding different aspects pertaining to the perception of mathematics was obtained by administering a questionnaire

The responses to the questionnaires pertaining to different aspects were converted into scores by comparing with the responses of experts group Based on these scores the different items were assigned ranks separately for male and females. Also an overall index for each aspect was computed in case of males and females for comparison purpose. These are shown in Tables 2.1 to 2 16 and Table 3. Higher value of index indicates better positive attitude towards that aspect.

The opinions of males and females regarding the perception of mathematics were shown in Table 2.1. From this table, it was observed that the correlation

TABLE 2 1

Ranks of Males and Females Regarding the Perception of Mathematics

Aspect	Expert	Males	Females
Mathematics is a study of numbers	1	1	1
Mathematics is a study of symbols	5	4	4
Mathematics is a study of geometrical figures	3	2	2
Mathematics is a study of computation	4	5	6
Mathematics is a study of proofs	2	3	3
Mathematics is a study of Sets	6	6	5

Correlation between Experts and Males   0 8857
Correlation between Experts and Females   0.7714
Correlation between Males and Females   ·   0 9429

TABLE 2.2

Ranks of Males And Females Regarding Liking of Different Branches of Mathematics

Branch	Expert	Males	Females
Algebra	1	2	1
Arithmetic	2 5	3	2 5
Geometry	2 5	1	2.5

Correlation between Experts and Males   ·   0
Correlation between Experts and Females   1
Correlation between Males and Females   .   0

TABLE 2.3
Ranks of Males and Females Regarding their Liking of Algebra

Reason	Experts	Males	Females
Algebra is more powerful than arithmetic	1	3	3
Algebra has symbols	3	2'	2
Algebra is more general compared to arithmetic	2	1	1

Correlation between Experts and Males   . -0.5
Correlation between Experts and Females   . -0 5
Correlation between Males and Females   . 1 0

TABLE 2.4
Ranks of Males and Females Regarding Disliking of Algebra

Reason	Experts	Males	Females
Algebra has symbols	3	3	3
Algebra is not meaningful as arithmetic	2	2	2
Algebra is difficult to understand formulae like $a^m \times a^n = a^m + N\ a^o = 1$	1	1	1

Correlation between Experts and Males   1
Correlation between Experts and Females   . 1
Correlation between Males and Females   1

TABLE 2 5
Ranks of Males and Females Regarding their Liking of Geometry

Reason	Experts	Males	Females
Geometry has beautiful figures and similar figures we can see in different walks of life	4	4	4
Construction of geometrical figures is an interesting activity	3	2	1
Many properties can be understood through figures only and no need to remember properties as rules	2	1	2
The proofs in geometry are easy to understand	1	3	3

Correlation between Experts and Males   0 4
Correlation between Experts and Females   . 0 2
Correlation between Males and Females   . 0.8

TABLE 2.6

Ranks of Males And Females Regarding their Liking of Arithmetic

Reason	Experts	Males	Females
Arithmetic is useful in daily life	1	1	1
Arithmetic has no symbols	3	3	3
Arithmetic helps one to measure precisely the quantities such as length, area, volume, etc.	2	2	2

Correlation between Experts and Males   .   1
Correlation between Experts and Females   1
Correlation between Males and Females   1

TABLE 2 7

Ranks of Males and Females Regarding their Perception about the Mathematics Subject

Aspect	Males	Females
I dislike arithmetic	5	4.5
I dislike geometry	3	3
Mathematics should not be made compulsory	4	4 5
Mathematics helps person to think logically	1	1
Mathematics is a language of science	2	2

Correlation between Males and Females = 0 9747

TABLE 2.8

Answers of Males and Females Regarding Following Problem

Since $\dfrac{ab}{ac} = \dfrac{b}{c}$ then it is natural to expect that $\dfrac{a+b}{a+c} = \dfrac{b}{c}$.
Do you agree with this statement?

Aspect	Males	Females
Not attempted	13	6
Right answer	32	37
Wrong answer	0	7

TABLE 2 9
Scores of Males and Females Regarding the Folowing Problem

Given a right angled triangle, What are its sides?

Marks	Males	Females		
0	13	16	0	0
1	14	16	14	16
2	1	3	2	6
2 5	0	1	0	2 5
3	3	0	9	0
4	13	14	52	56

Males average score   = 1 75
Females average score = 1 61

TABLE 2.10
Scores of Males and Females Regarding the Following Problem

Given three sides of a triangle there is only one triangle with these sides Give justification

Marks	Males	Females
0	22	21
1	11	14
2	6	6
2.5	2'	6
3	3	2
4	1	1

Males average score   = 0.9111
Females average score = 1 02

TABLE 2 11
Scores of Males and Females Regarding the Following Problem

Given three angles of a triangle there is only one triangle of these angles

Marks	Males	Females
0	32	35
1	9	11
2	0	2
3	0	0
4	4	2

Males average score   = 0 5556
Females average score = 0 46

TABLE 2 12
**Ranks of Males and Females Regarding their Reasoning for
Proper Understanding of Mathematics**

Reason	Experts	Males	Females
If teachers give more examples of mathematical ideas	1	2	2
If aesthetics of mathematics is made known	3	3	3
If applications of mathematics to real life situations are highlighted	2	1	1

Correlation between Experts and Males   0 5   Male Index   =   3.0
Correlation between Experts and Females   .   0 5   Female Index =   2.53
Correlation between Males and Females   .   1 0

TABLE 2 13
Ranks of Males and Females Regarding Liking of Mathematics

Aspect	Experts	Males	Females
Mathematics is an essential tool in science and technology	1	1	1
Mathematics helps a person to think logically	9	4	2
Mathematics is all pervading and has application in all walks of life	2	10.5	3
Mathematics is instrumental to achieve positive results/outcomes and predictions which are real	10	7	9
Most modern ways of life would hardly have been possible without Mathematics	3	12 5	6
One can learn mathematics on his own	15	15	15
Mathematical concepts evolved out of human needs for peaceful co-existence	14	°14	14
Mathematics is a compulsory subject in the schools	6	4	9
Mathematics provides more job opportunities in computers where Mathematics is essential for computer algorithms	4	7	7
Mathematics increases the communication power of the world	7	12 5	12.5

Geometry is very useful in daily life situations like construction of buildings, designing of patterns in textile industry, etc	5	2	5
Mathematics is a language of science	13	4	11
Mathematics is very useful in business	8	7	4
Hallmark of Mathematics is precision	12	9	9
One of the vastest areas of the world of contemplative beauty is Mathematics and this is sufficient reason for the study of Mathematics	11	10 5	12 5

Correlation between Experts and Males   0 3874   Male Index   =   3 84
Correlation between Experts and Females   .   0,7498   Female Index =   3.81
Correlation between Males and Females   .   0 6335

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TABLE 2.14

Ranks of Males and Females Regarding their Disliking of Mathematics

</div>

Reason	Experts	Males	Females
Mathematics is a difficult subject	3	4 5	2
Mathematics involves some kind of logical thinking	2	1	3
Mathematics is a language of complete abstraction	1	2 5	10
Mathematics is a very boring subject	17	17	17
Mathematics is full of symbols	8	13,5	7
Mathematics is made of unrelated topics	11	13,5	15
New discoveries are seldom made in mathematics	12	8	8 5
It is difficult to concentrate on mathematics	4	8	4
Mathematics formulae can be easily forgotten	7	13,5	5,5
Parents do not encourage to take mathematics	13	4 5	8 5
Teachers do not teach mathematics well	5	8	15
Mathematics is a collection of rules and facts to be remembered	9	2 5	1
Present day mathematics does not have much practical application	16	8	5 5
It is not easy to score well in Mathematics	14	13,5	15
Mathematics is meant for only intelligent students	10	8	13
Mathematics teacher is not good	6	13 5	12
There are less job opportunities for mathematics, compared to Science subjects	15	13 5	11

Correlation between Experts and Males   0.5350   Male Index   =   3 19
Correlation between Experts and Females   ·   0 4207   Female Index =   3 34
Correlation between Males and Females   0.6173

TABLE 2 15
**Ranks of Males and Females Regarding their Reasons for not to have top
Level Mathematicians**

Aspect	Experts	Males	Females
Women are down-to-earth practical while mathematics is abstract	5	6 5	7
Parents do not agree girls to take up higher mathematics	3	6 5	3
Genetic factors of females do not promote creative work in Mathematics	7	8	4,5
Social factors do not favour the girls to go for higher studies in Mathematics	1	1	4 5
Girls' self-esteem decreases during adolescence more than that of boys	6	4	2
Vocational interests of women are different	2	2,5	1
Brain system of girls is different from that of boys	8	5	8
Girls prefer careers that involve living things (like Biology, Medicine)	4	2.5	6

Correlation between Experts and Males   .   0.6266   Male Index   =   3 20
Correlation between Experts and Females   :   0.4791   Female Index =   3 08
Correlation between Males and Females   .   0.2182

TABLE 3
Indices of Different Aspects

Aspect	Gender	Index		
		Teacher Educators	Students	Teachers
Perception of	M	9 08	12 97	5 0
Mathematics	F	8.43	13 40	6 0
Liking of	M	16.85	8 23	3.84
Mathematics	F	23.75	7 62	3 81
Disliking of	M	1 08	1 90	3 19
Mathematics	F	19.4	3 54	3 34
Understanding	M	--	3.00	3.0
of Mathematics	F	–	3 41	2 53
Liking of different	M	2 51	3 09	–
branches of Mathematics	F	3 18	3.38	–
Reasons for not to have top	M	9 85	–	3.20
level women Mathematicians	F	7 43	–	3 08

between males and experts was 8857 whereas that of females was .7714 Similarly, the correlation between males and females was .9429. These figures indicate that there was significant relationship between males opinion and females opinion regarding the perception of mathematics.

From Table 2 2 it was very interesting to note that females were having very high concordance in liking of different branches of mathematics with the experts but it was not true in case of males Males and females have the same reasons for liking and disliking of the individual branches of mathematics like algebra, arithmetic and geometry. But they were different when compared to those of experts Males and females agreed in giving their reasons for better understanding of mathematics even though both these groups have no perfect concordance with the experts (Table 2.12).

Females were closer to the experts regarding their liking of mathematics But there was no significant relation between males and females in liking of mathematics. This was obvious from Table 2.13.

While giving the reasons for disliking mathematics, all the three groups differed. Of course there was little relationship between males and females in this regard (Table 2.14).

The responses for not to have top level women mathematicians were listed separately for experts, males and females in Table 2 15 It was observed that males and females were very much different in their reasons.

Both males and experts mentioned that 'social factors do not favour girls to go for higher studies in mathematics' as the main reason whereas females mentioned that 'vocational interests of women are different' as the main reason. However, males and experts have mentioned this reason as second in priority. The overall order of the reasons for gender bias given by the participants is shown below

1. Encouragement from the parents is less for girls
2. No sex difference in Mathematics
3   Have no exact idea about the sex difference.
4. Women do not have more exposure
5. Girls prefer to settle in life sooner than boys
6   Women do not prefer mental stress that is needed in Mathematics
7. Women cannot have the concentration that is needed in Mathematics
8   At lower level, girls do better than boys in Mathematics.
9. Women are capable to become good Mathematicians if proper opportunities are given
10. Genetic factor play an important role
11. For higher Mathematics, the abilities would be different
12. Girls do not like Mathematics at higher level.
13. Boys think more logically and have better exposure
14. Computation abilities of boys are better
15. Girls are having more mathematical abilities
16 Girls are having more thinking capabilities.
17. Girls are more active.

Main Findings

1. Boys were good in abstract thinking and symbolising concepts in mathematics whereas girls were good in logical thinking and mathematical modelling.

2. Both males and females have the same perception of mathematics.

3. Males and females have the same level of liking mathematics

4. Males and females gave the same reasons for their liking and disliking of the individual branches of mathematics like arithmetic, algebra and geometry .

5. Males stated that 'social factors do not favour girls to go for higher studies in mathematics' as the main reason for not to have top level women mathematicians   But females stated that 'vocational interests of women are different' as the main reason

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Thinking Skills: Classification, Process and Development

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Abstract

This article deals with the classification, process and development of thinking skills. While classifying the thinking skills into various categories, the paper describes the process and suggests ways to develop thinking skill among children In the end, the paper takes the pertinent role of a teacher in developing thinking skill as also the need for serious thinking in the teacher prepartion for developing thinking skills.

Key words · Thinking Skills, Classification, Process and Development of Thinking Skills

Thinking is the most general but least explicit word, which implies nothing more than the entrance of an idea or a notion into one's mind. It is the process of forming an idea or notion of something in the mind It involves the process of using one's powers of conception, judgement, or inference in regard to any matter or subject which concerns one or interests one. Everybody can dance, but to be a good dancer one needs to make deliberate effort. Similarly, every individual has the ability to think. But to be a good thinker one needs to make deliberate effort. In order to develop thinking skills among the students one needs to know the various thinking skills, which are mentioned here.

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Teachers have to understand the various thinking skills and the process of developing such skills among students

Classification of Thinking Skills

Over the years, there have been a number of attempts made to develop a classification system for thinking skills. Each model has some strengths and weaknesses. One well-known model is Bloom's six levels of classification of thinking skills into knowledge, comprehension, application, analysis, synthesis and evaluation. Many educators have encountered the Bloom taxonomy (1956). Edys Quellmalz (1985) also classified thinking skills into five categories as recall, analysis, comparison, inference and evaluation. Many people find this easier to use. We were confused in putting some of the skills in a particular category

In order to classify thinking skills we followed two approaches:

(i) Product approach· With two categories
(ii) Process approach: With seven categories/families

Product Approach

Here thinking skill is classified on the basis of its end result or output Accordingly, there can be two categories – Critical Thinking and Creative Thinking.

Critical Thinking

Critical thinking is the process of analysing, synthesising, and/or evaluating the authenticity, accuracy and/or worth of information and arguments gathered through observation, experience, reflection and logical reasoning. It is the ability to make evaluations and judgements based on *logic and ideas*, rather than on intrinsic value. It is often equated with convergent thinking

We identified twenty-three micro-skills for developing critical thinking by observation, scanning literature, debate and discussion with experts. These are. comparing (CMP), evaluating (EVA), hypothesising (HYP), logical deducing (LoD), distinguishing similar ideas (DSI), distinguishing facts and opinions (DFO), classifying (CLA), estimating (EST), interpreting (INT), identifying pros/cons (IPC), identifying propaganda (IdP), justifying (JUS), identifying assumptions (IdA), observing (OBS), predicting (PRE), reorganising (REO), inductive reasoning (InR), setting criteria (SeC), sequencing (SEQ), translating (TRA), summarising (SUM), synthesising (SYN) and exploring implications (Ex I). Let us discuss in brief the meaning of each of these micro-skills.

Comparing: It is the process of examining the attributes of two or more elements by the process of collating and contrasting in order to discover similarities and differences between them Here, attributes refer to characters, qualities, features or traits. Elements may be persons, objects, concepts, ideas or phenomena

Evaluating: It is the process of giving value to an element according to certain criteria or standard. In order to evaluate fairly, we have to observe, compare and clarify our standards. Besides, we have to gather information to measure against our pre-decided standards or requirements.

Hypothesising· It is the process of formulating or suggesting the most suitable solution(s) to a problem or to explain an unknown phenomenon or an unfamiliar situation It is a tentative solution whose validity is to be established after testing.

Logical Deducing: It is the process of arriving at an unknown truth (called inference) from the truths already known (called premises).

Distinguishing Similar Ideas: It is the process of differentiating between two or more ideas that resemble in many respects Here the ideas may be objects, concepts, attributes or phenomena

Distinguishing Facts and Opinion A statement can be of two types– facts and non-facts. Facts are those statements, which are true and verifiable. Non-facts are those that are presented as facts but actually, they are not facts Non-facts are of two types– error and opinion Errors are those statements, which are actually incorrect Opinions are those statements, which may be true or false but are based on subjective judgements This micro-skill enables a person to identify which is a fact and which is an opinion.

Classifying: It is the process of distributing elements into different classes, arranging in sets according to some method founded on common properties or character.

Estimating: It is the process of calculating and evaluating approximate value position of an element. It judges, assesses and rates tentatively or approximately the value or significance of something from imperfect data. The

value may be extrinsic (money), or intrinsic (moral).

Interpreting: It is the process of presenting the meaning of a vague/difficult/mysterious concept in understandable terms in the light of individual beliefs, judgements, or circumstances. It brings the concept to realisation by performance or direction, e g to act as an interpreter between speakers of different languages.

Identifying Pros and Cons: It is the process of recognising and analysing the strengths and weaknesses of an element and finding arguments In favour of and against the element.

Identifying Propaganda: Propaganda is deliberate, systematic spreading of ideas, faith, facts, information, rumour, doctrine, allegations or a system of principles. It is essential to identify the propaganda so as not to get biased.

Justifying· It is the process of defending the arguments based on relevant criteria It involves the defense of what we regard as true and the refutation of what we regard as false. When we defend a proposition, we give its positive points only. Whereas, when we refute a proposition, we give only its negative points

Identifying Assumptions. Assumption is an unstated premise or belief that must be true for the argument to be valid. For example, Asians often make the assumption that non-Asians are smarter. Assumptions help in guiding the internal thought process of an individual. Internal thought process guides an individual's activities.

Observing: Scientists try to make careful and accurate observations When possible, they use instruments such as microscopes, thermometers, and balances to make observations. Measurements with a balance or thermometer provide numerical data that can be checked and repeated.

Predicting: It is the process of anticipating an outcome based on the use of one's personal knowledge, observations, inferences, or experiments. For example, predicting the height of a plant in two weeks time based on a graph of its growth during the previous *four* weeks

Reorganising: Organising is the process of arranging the parts of a system, each having a special function to systematise working order so that a coherent unity or functioning whole can be formed Reorganising is to organise, arrange, plan and direct something systematically again but differently. It can be done after making substantive revisions of the existing structure. For example, in school, reorganising may include a reformulation of teaching-learning practices, structures, policies, procedures and rules that sustain a learning organisation.

Inductive Reasoning: Inductive reasoning moves from specific observations to broader generalisations and theories So, we also call this as 'bottom up' approach. For example, if all the people you have met in a particular city have been very non-cooperative, you might then say "all the residents of this city are non-cooperative".

Setting Criteria: A criterion is a standard, rule or test by which we judge or measure the extent of quality of something. So, setting criteria is the process of selecting the parameters for the formulation of guidelines to steer the process and judge or measure the outcomes We set different criteria for different subject areas.

Sequencing. It is the process of arranging the elements in the desired order of their occurrence. It is the ability to put together in more than one direction at a time. We do this to children all the time. For example, we say "Go to your. . and get your pen and paper, Go to the. and change your clothes and get ready for bed." So sequencing can also involve three or more directions to remember at one time We do sequencing by arranging the elements chronologically with respect to time, space and logic.

Translating: Translating could be in a wide variety of fields, such as cultures, policy and plans, commercial, legal, technical, medical, scientific and literary. One could gain a lot of knowledge from these translations Due to cross-cultural differences, the translator must understand how the original message is 'expressed' in the source language (the original text) and how it should be received by a foreign reader in the target language.

Summarising: It is the process of giving the 'gist' of an article or an idea, using your own words and not the author's. Summaries are generally informative and descriptive They may include simply deleting extraneous material, highlighting key words and miniaturising primary ideas

Synthesising. It is the process of building up of separate elements into a complex, connected and coherent whole. The

whole may be a rule, a theory or a system.

Exploring Implications: Implication is the indirect suggestion that something is implied as a natural consequence of something else. It is a logically necessary consequence of a phenomenon. For example, water shortage means that we have to stop taking long showers. To accept a statement one must also accept its implications.

Creative Thinking

Creative thinking is the process of generating ideas, processes, experiences or objects It is a multi-dimensional attribute differentially distributed among the people. It is often equated with divergent thinking

We identified twenty-four micro-skills for developing creative thinking by observation, scanning literature, debate and discussion with experts. These are. seeing problems (SeP), defining problem (DeP), escaping dominant idea (EDI), making rules (MaR), removing faults (ReF), enhancing persistency (EnP), alternatives, possibilities, choices (APC), consequences and sequel (C&S), consider all factors (CAF), concept challenge (CoC), combination (COM), making decision (MaD), focusing (FOC), goal setting (GoS), imaging (IMA), other people's views (OPV), planning (PLA), plus, minus, interesting (PMI), random input (RaI), stepping stone (StS), using analogies (UsA), yes-no-po (YNP), finding requirements (FiR) and elaborating (ELA). Let us discuss in brief the meaning of each of these micro-skills.

Seeing Problems: It is designed to develop sensitivity to problems, which involves a deliberate attempt to see, comprehend, and list the problems concerning the working of simple to complex things/articles/ideas around us

Defining Problem: It is the process of stating the problem exactly in clear-cut and appropriate words without any ambiguity or vagueness. People often think that it is easy to define the problem but practically it is difficult. We repeatedly hear people saying, "What is the real problem?" They know there is some problem But the problem is not spelt out exactly.

Escaping Dominant Ideas· It is used to recognise an idea, which dominates the situation. Once it is recognised it is not too difficult to escape from it. A concept may play any role in a situation but the dominant idea 'controls' the situation In order to be creative, to find other ways, we may have to escape from the dominant idea. We are always made to move on a dominant idea, i e. the main track or highway along which thinking proceeds. We don't see the side road easily since its opening is very small But if it is taken, it can lead to a wide and useful road.

Making Rules: Rules are governing directions for a specific purpose, an authoritative enactment; a regulation, a prescription; a precept For example, the rules of various societies; the rules governing a school, a rule of etiquette or propriety, the rules of cricket

Removing Faults. It is a thinking tool designed to measure a factor of sensitivity to problems which involves the deliberate effort to figure out faults,

inadequacies, deficiencies, limitations and weaknesses concerning the working of simple and handy articles/objects of common use or processes

Enhancing Persistency· It is the quality or state of staying or continuing The success or failure of an individual depends largely on the ability to endure and continue to strive for the sake of achievement in spite of fatigue and discouragement, internal and external criticism and outside distractions.

Alternatives, Possibilities, Choices. Often, we do not look beyond the obvious alternatives. This micro-skill shows how to extract the concept behind a group of ideas and then use it to generate further alternatives

Consequences and Sequel· It provides a framework of looking at the future consequences of some action, plan, decision, rule, invention, etc. It is concerned with action of some sort, either the action one intends to take oneself or the one that the others are taking. It is something like making a road map. If the road ahead is bad, we do not take that road.

Consider All Factors. It involves the exploration of a situation before coming up with an idea. This thinking operation is essentially related to action, decision, planning, judgement and coming to a conclusion. The aim is to attempt to be as complete as possible in considering all the factors in any situation. Otherwise, we tend to think only about the first factors that come to our mind.

Concept Challenge. A concept is an abstract general conception, a notion. A challenge is a systematic examination of the way something is currently done including assumptions, boundaries, essential factors, avoidance factors, etc It is the challenge to traditional and existing modes of thinking. It is useful in producing new perceptions of an established situation Challenge is not an attack or criticism. It is the willingness to explore the reasons why we do things the way we do and whether there are any alternatives.

Combination: It puts together the elements that have existed separately to produce something that has a value greater than the sum of its parts. It must show some useful purpose in the end.

Making Decisions It provides an opportunity to practice prioritisation It chooses between alternatives in problem-solving, planning and designing situations. The aim is to enlarge one's view of a situation and to provide a means of sidestepping the habit of giving the quick decision to an idea.

Focusing. Focus is a point of concentration or attention on something. Focusing can be defined as putting concentrated effort or attention on a particular thing. When we are focusing on something, we keep our attention on selected pieces of information and ignore the others. Focus should be given to a 'true' problem with accurate goals.

Goal Setting It is a formal process for personal planning. By setting goals on a routine basis we decide what we want to achieve and then step-by-step move towards the achievement of these goals The process of setting goals and targets allows us to choose where we want to go in life. By knowing precisely what you

want to achieve, we know what we have to concentrate on to do it

Imaging. It is the ability to form mental images of things or events. For example, the word "fire" is easily imagined It includes strong cues in four of the five senses – visual (red and yellow flames), auditory (crackling and other noises), feeling (heat), and smell (smoke). Can you guess the missing sense?

Other People's Views: In an argument, most of the people see only from their point of view. They are not in a position to hear why the other people say something else This micro-skill provides a framework of looking at any idea from other people's viewpoints

Planning It is an act or process of drawing up plans or layouts for some project or enterprise. Whether the system is an organisation, department, business, project, etc., the process of planning includes planners working backwards through the system. They start from the results (outcomes) they prefer and work backwards through the system to identify the processes needed to produce the results Then they identify what inputs are needed to carry out the processes It may also mean the cognitive process of thinking about what you will do in the event of something happening.

Plus, Minus, Interesting: This thinking tool provides a framework of looking at the Plus points **(P)**, the Minus points **(M)**, and the Interesting points **(I)** in any idea Normally, people do **P** and **M** aspects of a situation through debates There is no provision for the **B** point. The **PMI** tool has appropriately introduced the **I**

aspect which is the imaginative part to enhance creative thinking.

Random Input: It involves the deliberate introduction of something that is unconnected with the situation. Using **Po**, which is a deliberate withholding of judgement to explore the idea further, random input is held in the same context as the problem to see what new ideas are triggered A word that has been obtained randomly is brought into contact with the focus area that needs the new ideas. The logic of the method is that, in a patterning system, if you start at the periphery the patterns you open up are different from those available to you at the centre.

Stepping Stone. It means to use the 'key stone' to develop some new ideas. The idea is not judged, but it is used as a "stepping stone" to get to new ideas. It is the attitude of treating any idea not only for its own value but also in terms of what it may lead to Emphasis should, therefore, be laid on the double operation: one, what can I use as a stepping-stone? And second, where can I move to from the stepping-stone?

Using Analogies: An analogy is a comparison of something familiar to something unfamiliar in order to find or explain a common principle. To argue inductively through analogies is to proceed on the assumption that if two things are similar in some respects, then they are probably similar in other respects

Yes. No, Po The ability to use ideas outside the judgement system is the basis of the whole of creativity 'Po' is merely a convenient device for setting the

point so that it can be understood and used. It is neither **'yes'** nor **'no'** but a creative stimulus to explore the idea further. A deliberate effort in the beginning stages is all that is required to get into the natural attitude of it later.

Finding Requirements: It is a process of exploring, searching and identifying problems occurring while examining for its 'do-ability', 'intrinsic utility' and looking for the problem of 'ecological validity'. An idea is said to be 'do-able' if it is technically and economically feasible. The requirements of 'intrinsic utility' means whether the idea has sufficient potential for which it was proposed or not The requirements of 'ecological validity' imply that the idea is contextually acceptable by other related systems operating in the environment. It gives value addition to the idea.

Elaborating: It means adding details, explanations, examples or other related information from prior knowledge It is a skill used to extend a simple idea or a response to make it more elegant or useful, to expand/add ideas by expressing inferred meaning.

Process Approach

Process approach says, the thinking should be taught as an independent course. Looking at the process of thinking, we arrived at seven families of thinking skills. They are: (i) Focusing skills, (ii) Information gathering skills, (iii) Organising skills, (iv) Analysing skills, (v) Generating skills, (vi) Integrating skills, and (vii) Evaluating skills. We used the word 'family' as these skills are overlapping and the categories are not mutually exclusive. Oftentimes, a skill, which we have taken in one family, may look like belonging to another family. By considering their weightage we put them in one family. These families of thinking skills are discussed below:

1. Focusing Skills

It is the process of directing one's attention to selected information. It helps in clarifying problem situation, establishing direction and purposes, and overcoming all external and internal difficulties. The micro-thinking skills which come under this family are Defining Problem (DeP), Goal Setting (GoS), Enhancing Persistency (EnP) and Focusing (FOC)
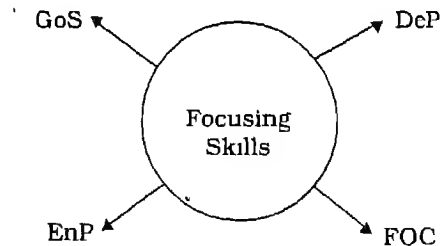
Fig. 1: *Focusing Skills*

2. Information Gathering Skills

It is the process of acquiring relevant data from various sources. The sources may be experience, literature, people, object or situation It helps in obtaining information through one or more senses. Information may be about various viewpoints about the problem, relative merits and demerits about an event and looking for problems in an object or

situation The micro-thinking skills which come under this family are Observing (OBS), Identifying Pros and Cons (IPC), Other People's View (OPV), Seeing Problems (SeP), Plus Minus Interesting (PMI), and Finding Requirements (FiR)
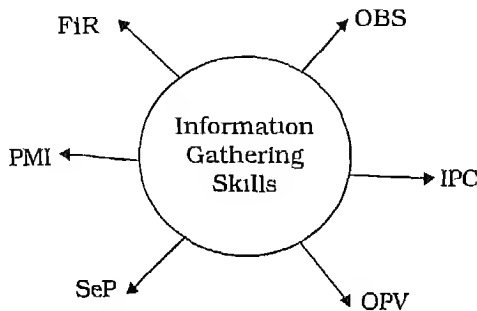

Fig. 2: *Information Gathering Skills*

3. Organising Skills

It is the process of arranging information so as to be used more effectively. It involves identifying similarities and differences between elements, placing elements in groups, ordering elements, setting the direction for something, and transforming an idea from one medium to another. The micro-thinking skills which come under this family are: Comparing (CMP), Classifying (CLA), Sequencing (SEQ), Translating (TRA), Interpreting (INT), Consider All Factors (CAF), and Planning (PLA).

4. Analysing Skills

It is the process of clarifying existing information by identifying and distinguishing among components, attributes and so on. It involves determining characteristics or parts of something and recognising the ways in
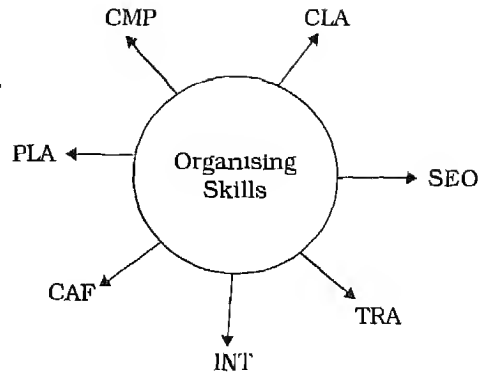
Fig. 3: *Organising Skills*

which elements are related. The process helps in identifying facts, opinions, removing defects in an element, questioning an existing and dominating idea and comparing a familiar concept with an unfamiliar concept The micro-thinking skills which come under this family are· Distinguishing Facts and Opinion (DFO), Distinguishing Similar Ideas (DSI), Escaping Dominant Idea (EDI), Removing Faults (ReF), Using Analogies (UsA), and Concept Challenge (CoC).
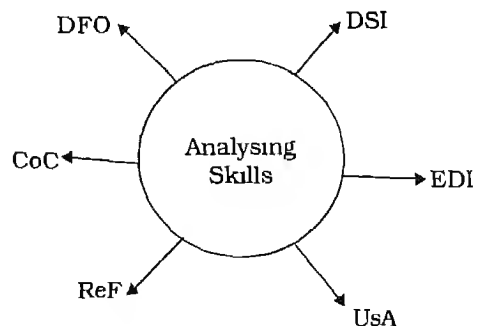
Fig. 4: *Analysing Skills*

5. Generating Skills

It is the process of using prior knowledge to add new information. It involves

reasoning on the basis of given information, anticipating future events, using prior knowledge to expand the ideas, creating ideas and alternatives and guessing the tentative solutions. The micro-thinking skills which come under this family are: Inductive Reasoning (InR), Logical Deducing (LoD), Predicting (PRE), Hypothesising (HYP), Elaborating (ELA), Making Rules (MaR), Imaging (IMA), Stepping Stone (StS), Random Input (RaI), Yes-No-Po (YNP), and Alternatives, Possibilities, Choices (APC)
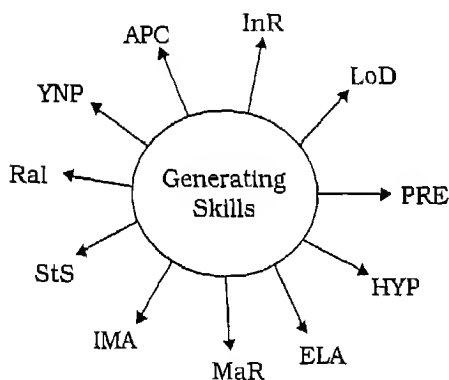

Fig. 5: *Generating Skills*

6. *Integrating Skills*

It is the process of connecting and combining information The process involves abstracting information, combining parts to form a meaningful whole and changing existing structure to a new structure The micro-thinking skills, which come under this family use: Summarising (SUM), Synthesising (SYN), Reorganising (REO) and Combination (COM)
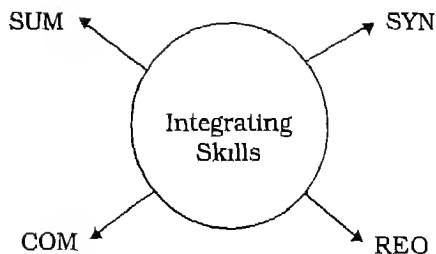
Fig. 6: *Integrating Skills*

7. *Evaluating skills*

It is the process of assessing the reasonableness and quality of ideas The process involves setting a standard for making judgement, seeking expected consequences, confirming the accuracy of claims, evaluating approximate value position of an element and recognising logical fallacies and assumptions. The micro-thinking skills which come under this family are Evaluating (EVA), Consequences and Sequel (C&S), Making Decision (MaD), Exploring Implications (ExI), Estimating (EST), Justifying (JUS), Identifying Assumptions (IdA), Setting Criteria (SeC), and Identifying Propaganda (IdP).
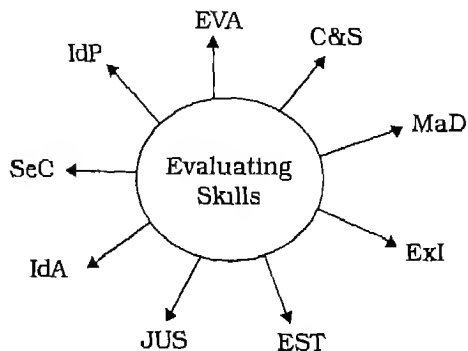
Fig. 7: *Evaluating Skills*

Shared Skills of Critical and Creative Thinking and Families of Thinking

If we look at the following figure, focusing skills (1) and generating skills (5) come under creative thinking as in both the families the main focus is on divergent thinking It should be noted that some of the micro-skills of critical thinking also come under the generating skill family as these skills also use prior knowledge to add new ideas. Integrating skills (6) and evaluating skills (7) come under critical thinking as in both the families the main focus is on problem-solving and evaluation. Some of the micro-skills from creative thinking also come under both these families as these skills are also engaged in providing new structure and creative evaluation Information gathering skills (2) organising skills (3) and analysing skills (4) come under both critical and creative thinking as both gather, organise and analyse information

Process of Developing Thinking Skills

We can develop our understanding for a given thinking skills in four different ways. These are:

1. Structural Approach

The *structural approach* would mean that the learners will understand a given thinking skill by breaking the 'whole into parts', i.e breaking a concept into its attributes. Let us take the concrete example of a bicycle where the learner divides the bicycle into wheels, handle, brakes, seat, etc

2. Functional Approach

The functional approach would mean that the learners will identify the ascribed functions, purposes and uses of a given thinking skill like the concrete example of a bicycle can be used for movement, carrying things, etc.
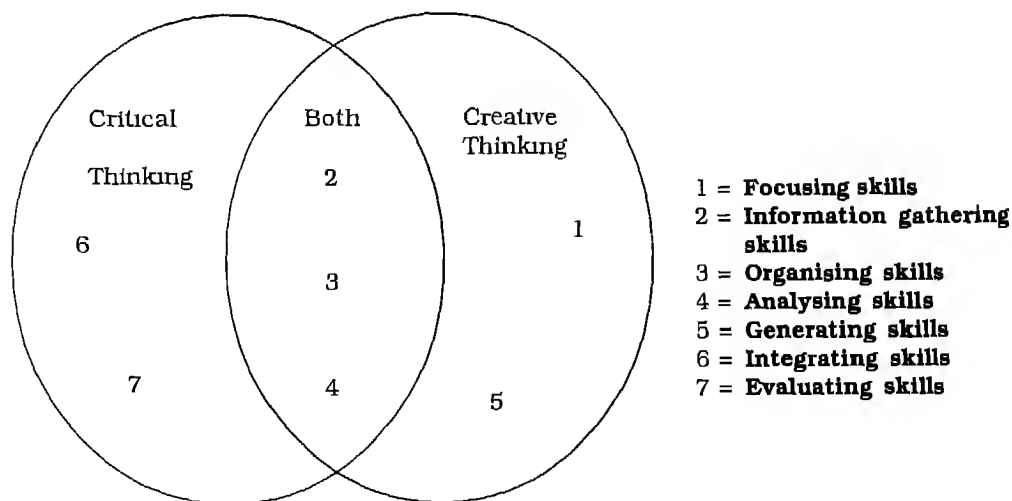

1 = **Focusing skills**
2 = **Information gathering skills**
3 = **Organising skills**
4 = **Analysing skills**
5 = **Generating skills**
6 = **Integrating skills**
7 = **Evaluating skills**

Fig. 8: *Shared Skills of Critical and Creative Thinking and Families of Thinking*

3. *Process Approach*

The process approach can be divided into two parts: definitional description, and component processes: (a) Definitional description would mean that the learner uses the art of arriving at output from the given input. For example, cycling process would mean the use of a tool called cycle to cover a distance by using the principles of machine. (b) In addition, the learner can also identify the component processes and their artful integration to form the complete process, e.g the learner is busy in the process of cycling while he/she is engaged in balancing, paddling, using brakes, etc.

4. *Operational Approach*

Lastly, the operational approach would mean that the learner would gain awareness of the steps involved in sequential stages The procedural steps are identified The learner may be helped by the teacher where the identified pedagogical steps/stages are explained, demonstrated and tested. For example, in case of cycling, the operational steps would be pushing, balancing, sitting, paddling, handling, and others like using brakes, etc.

Steps of Organising Learning Situation

Learning situation can be organised both through face-to-face (either in groups or one-to-one) and distance mode (self-learning through module). The steps of organising learning situation may be as follows:

(a)   Formation of groups of four/five learners each.

(b)   Choice of a group leader to act as a spokesperson.

(c)   Distribution of instructional material to each learner

(d)   Explanatory introduction of the micro-skill.

(e)   Demonstration of examples

(f)   Three to four practice items.

(g)   Sharing of ideas and class discussion of micro-skill.

(h)   Drawing principles concerning micro-skill.

(i)   Providing further problems and thinking situations.

Role of Teacher

While teaching thinking skills, a teacher has to keep the following things in mind:

*   Identify which micro-skill should be taught and emphasised. Know the process by which the skill is to be taught

*   Thinking level questions should be simple and subject-based Lessons should consist of relevant substance. The substance should be subject-based, skill-based, problem-based and issue-based The substance should be so chosen that the skill should be maximised Identify comprehension pitfalls in the subject.

*   Think aloud: discuss your own thought processes.

*   The classroom should be converted into a 'community of inquiry' by listening to one another with respect, building on one another's ideas, challenging one another to supply reasons for otherwise unsupported opinions, assist each other in drawing inferences from

what has been said, and seeking to identify one another's assumptions (Lipman, 1991)

- Encourage active student participation and involve the children in generating questions and provide an atmosphere in which students are free to think. Make the topic interesting through a discussion where students are allowed to express their ideas freely. Try to encourage shy and introvert students to ask. There should be sufficient scope to elicit all possible answers of the students though they seem to be illogical, vague and ambiguous. Focus should be given on the concepts of interest to children

- Make abstract concept concrete and relevant Use simulations and role-play Develop listening skills.

- Use probing questions. Use stories to motivate children to wonder and to inquire. Questions for the children should be open-ended. Use puzzles and logic approach for reducing attitudes that obstruct thinking and for building up useful attitudes.

Teacher Preparation for Thinking Skills

To improve student performance on thinking skills, schools of education must improve teacher training. *They must teach cognitive skills to preservice teachers before training them to teach these skills in the classroom* (Ashton 1988, 2). They must integrate thinking skills into all aspects of teacher preparation and train future teachers to be models of effective thinking strategies.

Teacher education institutions have several obstacles to overcome before accomplishing these goals, including administrative apathy, centralised curriculum, inadequate knowledge base on teaching thinking; a lack of consensus on methods of evaluating thinking programmes; conditions that require classroom management at the expense of academic instruction, etc National bodies like NCERT, NCTE, etc. must make a long-term commitment to programmes fostering the thinking process; provide inservice training, involve experienced teachers in the selection of instructional materials and testing programmes and appoint a committee to guide curriculum development Teacher education institutions assign mentors to new teachers; allot time for teachers to share effective strategies for instruction Inservice training that helps teachers to remodel their lesson plans and incorporate thinking skills, should be provided on a contionus basis Essential micro-thinking skills which need to be developed among students should be identified. Adequate literature should be developed on the micro-skills for teacher preparation both through face-to-face and distance mode.

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Yulina, N.S. 1998 Teaching people how to reason. The philosophical strategy of philosophy for children. *Thinking– The journal of philosophy for chil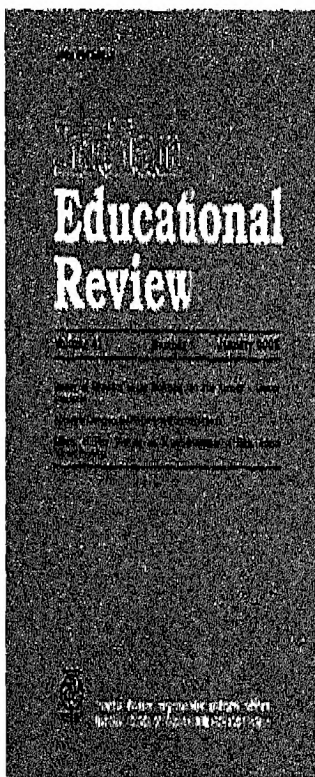dren* Vol. 13 (4). Mont Claire State University, NJ